TROPICAL DISEASES BUREAU.

TROPICAL DISEASES BULLETIN.

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CHOLERA.

MAITRA (G. C.). **An Investigation into the Origin of Cholera Epidemics in the Jheria Coal-Fields.**—*Indian Med. Gaz.* 1925. Mar. Vol. 60. No. 3. pp. 97–101. With 3 figs. [5 refs.]

High case incidence and high mortality are noticeable only at certain seasons as shown in Chart No. 1. Since the great epidemic of 1919, with about 2,500 deaths out of 4,400 cases, no outbreak of similar magnitude has been known. But small annual epidemics occur even now, causing great panic among ignorant labourers, leading to wholesale desertion and temporary closure of the affected colliery. As the question was so important from the industrial point of view a small laboratory was opened at the Mudidih Hospital. Blood and dejecta of suspected cases are collected and examined. Plate I shows a microphotograph of a stained film of cholera stool and one of a film from a suspected case who ultimately died in the Mudidih Hospital. The original infection was introduced (July, 1923) by a pilgrim from Puri who " fixed a worshipping place " in the village Nero, where the epidemic started. There were 16 cases and 7 deaths. Cholera infection was imported last year into the coal-fields from the pilgrim centres of Puri and Baidyanath.

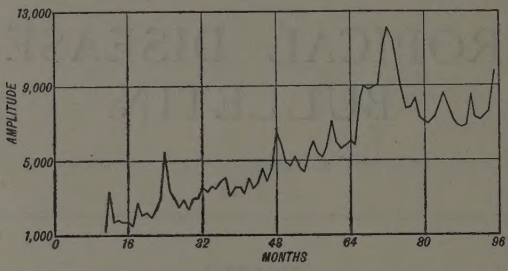
J. H. Tull Walsh.

i. RUSSELL (A. J. H.). **" Periodicity " of Cholera in India.**—*Lancet.* 1925. June 13. p. 1237. With 1 chart in text.

ii. ROGERS (Leonard) : iii. KING (W. G.). **Periodicity of Cholera.** [Correspondence.]—*Ibid.* June 20. p. 1322 : and June 27. p. 1369.

i. Recent bulletins issued by the Health Section of the League of Nations show that at the present time India is practically the only part of the world in which cholera exists in epidemic form. There can be no doubt that cholera has in India a regular seasonal periodicity. The author has applied the method of " periodiogram analysis " to the cholera deaths for the Madras Presidency for a period of 25 years, the statistics being arranged in three groups of districts, according to the periods in which these districts were affected by the different monsoons. In each of the three groups the annual periodicities are

very apparent; but by far the highest amplitude is reached in each group at the 72-month period, which proves that cholera in Madras Presidency, for the period of years under examination, has gone through a regular six-year cycle.



Madras Presidency, Northern Districts Group: Graph showing monthly amplitudes of Cholera deaths over period 1902–21. [Reproduced by permission from the *Lancet*.]

From work done during the last two months the author states that the same six-yearly periodicity has occurred in Bombay Presidency, the Punjab, the United Provinces, the Central Provinces, and in Mysore for the years 1896-1923.

ii. Sir Leonard Rogers discusses the "six-year cycle" put on record by Major A. J. H. Russell [above], and refers to his own work on "Bowel Diseases in Tropics," which contains a brief discussion of a "three-year cholera cycle" described, in 1885, by W. H. Bellew: "History of Cholera in India." Reference is also given to a study of the Epidemiology of Cholera in Southern India by A. Herbert, *Indian Med. Gaz.*, 1894. Sir Leonard has recently spent much time on a study of the epidemiology of cholera over a larger series of years than Major Russell and hopes to be able to formulate that the major epidemics of cholera which originate in Bengal can be foreseen in time to allow sanitary measures to be taken to control the spreading of infection by pilgrimages and fairs. He finds the conditions giving rise to cholera epidemics are not quite so simple as any "three-year" or "six-year" cycles.

iii. Colonel King, referring to Major Russell's paper, writes: This was the method employed by one of his predecessors in office in 1894, and formed the subject of a paper ["The Seasonal Prevalence of Cholera in the Madras Presidency," *Trans. First Indian Med. Congress* 1894]. This was illustrated by a diagram, founded on the figures of a decade; it inhibited monthly periodicity so markedly as in after years to justify it being termed the "Madras Cholera Clock."

A reference is also given to this *Bulletin*, 1919, Vol. 14, pp. 13–17.

J. H. T. W.

Palmer (F. J.). **The Treatment of Cholera by Cresol and Acid.**—*Indian Med. Gaz.* 1925. Apr. Vol. 60. No. 4. p. 155.

In the *Indian Med. Gaz.* for August, 1924, the author published a a paper on the treatment of cholera by cresol [this *Bulletin*, Vol. 21, p. 885]. To combat possible acidaemia alkaline water was given

after the acute choleraic symptoms had subsided. Although in the author's hands the results were very fair he was apprehensive that the exhibition of alkalies might not always be unfraught with danger. In two cases in out-gardens, in which the patients had, at first, appeared to do well, there was a suspicion that the set-back and subsequent fatal issue might have been due to the too early administration of alkali. The administration of alkalies at any stage of the treatment was discontinued, without, apparently, any loss of efficiency. Belief in the efficacy of dilute sulphuric acid as a prophylactic had been gradually strengthening. The author had speculated as to how much of the good effects of Tomb's treatment was due to the acid that it contained [*l.c.* p. 885]. Its effect was tried with the cresol.

The following dosage was decided :—

1 to 3 years, cresol 1 m., acid sulph. aromat. 1 m., water 1 oz. ; 3 to 7 years, cresol 2 m., acid sulph. aromat. 2 m., water 2 oz. ; 7 to 12, cresol 3 m., acid sulph. aromat. 3 m., water 3 oz. ; 12 to 16, cresol 4 m., acid sulph. aromat. 4 m., water 4 oz. ; Adult, cresol 4 m., acid sulph. aromat. 5 m., water 4 oz.

The doses every quarter of an hour for the first eight doses and every half-hour for the next four. The acid is then omitted and the cresol dose given hourly, two hourly and three hourly on three succeeding days.

Nine cases were treated, all adults. Eight were collapsed when first seen ; in three no pulse even in the brachial artery. There were two deaths.

Acid sulph. dil. may be used instead of acid sulph. aromat., but is naturally lacking in the carminative properties of the latter. Dilute hydrochloric acid might prove equally useful.

J. H. T. W.

Chatterjee (S. N.). **Analysis of Two Latest Cholera Treatment.**—*Indian Med. Rec.* 1925. Apr. Vol. 45. No. 4. p. 107. [2 refs.]

The author gives his views on the cresol treatment only on theoretical grounds. He hopes the profession will give an equal chance to his kaolin-permanganate method of treatment. [See this *Bulletin*, Vol. 21, pp. 885–886 (Palmer) ; *ante* p. 385 (Chatterjee).]

J. H. T. W.

Yokota (Kiyoshi). **Zur Kenntnis der Arzneifestigkeit des Vibrio Nasik.**—*Ztschr. f. Immunitätsf. u. Experim. Therap.* 1925. June 8. Vol. 43. No. 3. pp. 224–235. [9 refs.]

The drugs used in these laboratory experiments were : Eucupin, methyl-blue, trypaflavin and pyoktanin. The author concludes that the vibrio is not drug resistant in Ehrlich's sense.

J. H. T. W.

da Costa (Aristides). **Resultados da vacinação anticolérica na luta contra o cólera em Damão.**—*Bol. Geral. de Med. e Farmacia.* Bastora. 1924. Aug. 9th Ser. No. 8. pp. 342–347.

The author's results have been very satisfactory. He considers anti-cholera vaccine one of the best means for preventing the disease. The vaccine used at Parel is prepared from vibrios taken from severe cases. The vibrios are passed through guineapigs, sown on agar and

incubated for 18 to 48 hours. An emulsion of vibrios, in physiological salt solution, is exposed to a temperature of 55° C. for 15 minutes; 0·5 per cent. carbolic acid is then added. There have not occurred any unpleasant local or general reactions.

J. H. T. W.

SCHÖBL (Otto) & ANDAYA (Jose). **Cholera Vaccination; its Effectiveness as evidenced by the Presence of Antibodies in the Blood of Vaccinated Persons.**—*Philippine Jl. Sci.* 1925. Mar. Vol. 26. No. 3. pp. 311–316.

Six promptly agglutinable cholera vibrio strains were grown on acid agar and incubated at 37° C. for 24 hours. The cultures were emulsified in 30 cc. 5 per cent. glycerine in normal saline, heated in a water bath at 60° C. for 30 minutes, and then incubated at 37° C. for 10 days, being shaken vigorously several times a day. The anti-complement method was employed in the tests, using the anti-monkey system. Two units of amboceptor were used for the test proper. The conclusion was drawn that the dilution of the antigen to be used for the test proper should be 1 to 320, four times the dilution of the anti-complementary limit. Tables are given showing results after single doses of 500,000,000 and 1,000,000,000 tested 7 and 12 days after vaccination; and one table showing results after two injections of 500,000,000 and 1,000,000,000 with an interval of seven days, tested one week after the injections. The tests showed that antibodies persisted for six to ten months. The amount of antibodies stands in direct proportion to the amount of vaccine injected and to the number of injections given. Both the titre of the serum and the persistence of the antibodies depend on the number of injections to a higher degree than on the amount of the vaccine given. The wholesale vaccination in areas where outbreaks occur every year, as in places where sporadic cases occur during the off season, should be completed at least one month before the time when an epidemic may reasonably be expected to occur.

J. H. T. W.

MANALANG (Cristobal). **Agglutinin Formation following the Use of Castellani's Glycero-Vaccine.**—*Philippine Jl. Sci.* 1925. Mar. Vol. 26. No. 3. pp. 317–320.

A single dose of 1 cc. of Castellani's glycero-vaccine (cholera, 4,000,000,000; *B. typhosus*, 2,000,000,000; paratyphoid A, 1,000,000,000; paratyphoid B, 1,000,000,000) produced anticholera agglutinin in 37 of 43 vaccinated persons. The agglutinins appeared in 24 cases between the ninth and fourteenth days after a single injection. Six cases remained negative for 160 days of observation. Of the 37 positives agglutination became negative in 20, in dilutions of 1-20, within 160 days after vaccination. In more than 50 per cent. of these cases agglutinins were present in the blood of vaccinated persons for a period of three to four months. The formation of agglutinin in the blood of persons injected with Castellani's vaccine was more satisfactory than that obtained with the usual saline vaccine used in single 1·0 cc. doses (cholera, 1,000,000,000; *B. typhosus*, 500,000,000; paratyphoid A, 250,000,000; paratyphoid B, 200,000,000). The reactions, local and general, were practically the

same as those from saline vaccine, considering the number of bacteria given. The vaccine was given to at least 40,000 people, and not a single mishap was reported.

J. H. T. W.

KLÜCHIN (S.) & VIGODTSCHIKOFF (G.). **Experimentelle Bewertung der Choleravakzinationsmethode per os.**—*Cent. f. Bakt.* 1. Abt. Orig. 1925. Jan. 20. Vol. 94. No. 1. pp. 6–15. [13 refs.]

—— & ——, **Weitere experimentelle Untersuchungen ueber die Enterovakzination gegen Cholera, Typhus abdominalis und Dysenterie.** [Experiments with Oral Vaccination against Cholera, Enteric Fever and Dysentery.]—*Ztschr. f. Immunitätsf. u. Experim. Therap.* 1925. Feb. 16. Vol. 42. No. 2. pp. 98–104.

As the result of these experiments the authors conclude that for enteric fever, as also for cholera, entero-vaccination after Besredka's method, with bile-sensitization, is not confirmed by experiments, and that oral vaccination is of no practical value.

J. H. T. W.

MELNIK (M.). **De la virulence des vibrions cholériques en rapport avec l'âge des cultures.**—*C.R. Soc. Biol.* 1925. Apr. 3. Vol. 92. No. 12. pp. 941–943. With 1 chart in text.

Using cultures of *V. cholerae* on agar and bouillon the author carried out a series of experiments on guineapigs. He found that cultures on agar give a maximum virulence when 16 hours old, cultures on bouillon when 4 days old. The curve of virulence (charted) on agar rises and decreases rapidly. That of the cultures on bouillon increases more slowly, is maintained longer and decreases slowly.

J. H. T. W.

ZDRODOWSKI (P.) & BRENN (H.). [**On the Pathogenesis of Cholera and the Algid State. An Experimental Investigation.**]—*Trav. Inst. Microbiol. et Hyg. d'Azerbaidjan* (Baku). 1924. No. 1. pp. 1–40. [In Russian.]

The first part of this paper is devoted to a detailed review of SANARELLI's investigations on the same subject (this *Bulletin*, Vol. 21, p. 72; *ante*, p. 391). In the second part the authors record their own studies, the main object of which was to investigate the algid state on the basis of the results obtained by SANARELLI. The experiments were carried out on 100 rabbits. The authors confirm SANARELLI's conclusions regarding the enterotropism of cholera vibrios, having succeeded in all cases of intravenous and intraperitoneal inoculation in producing an infection of the small intestine. [A well-known phenomenon.] They have also reproduced SANARELLI's phenoma of algidity in rabbits. SANARELLI's contention that algidity is due to an interaction between the cholera vibrio and *B. coli* was tested by vaccinating one group of rabbits against cholera, and another against *B. coli*. In both cases attempts to reproduce the algid phenomenon failed, and the authors conclude that "vaccination of rabbits against cholera and the colon bacillus is capable of protecting the animals against SANARELLI's phenomenon"; further, it illustrates the correctness of SANARELLI's views.

Similar effects were produced by repeatedly inoculating rabbits with the killed cholera culture, the colon bacilli in this case being activated by the proteins of the vibrios. In another series of experiments the authors have shown that a state of algidity can be induced in rabbits by *B. coli* alone. In these experiments an intravenous injection of living coli cultures was followed 24 hours later by the introduction of "coli-toxin." The authors regard this experiment as a corroboration of SANARELLI's view, according to which the "algid syndrome" is not a "choleraic," but a "para-choleraic" phenomenon.

C. A. Hoare.

i. FUJII (Shyukyoku). [**On the Quantitative Oscillation of the Reducible Substances in the Blood and Cerebrospinal Fluid in Experimental Cholera.**]—*Chugai Ijishimpo* (*Cent. Med. Jl.*). 1925. Feb. Vol. 44. No. 3. [Summarized in *Japan Med. World.* 1925. Apr. 15. Vol. 5. No. 4. p. 102.]

ii. ——. [**A Study on the Combined CO_2 Contents of the Blood and Cerebrospinal Fluid of Experimental Cholera.**]—*Ibid.* No. 4. [*J.M.W.* p. 102.]

i. Administering cholera toxin to the guineapig or dog either intravenously or hypodermically, the author found that there developed a marked lowering of the sugar contents of the blood and cerebrospinal fluid with time differences in either case. Death took place with production of the lowest sugar concentration in both fluids. The prognosis is good when the sugar concentration rises. The author, therefore, suggests the use of glucose in the soda solution or saline injection in the treatment of human cases, as better than Ringer's or Locke's solutions.

ii. The author injected cholera vaccine [? toxin] into the dog. He could produce symptoms very similar to those in human cases. He also estimated the sugar contents of the blood and cerebrospinal fluid and found that in the early stage of the disease acidosis developed. From clinical view-points he concludes that the test of cerebrospinal fluid for acidosis may suggest to the clinician to abort hyperglycaemia or hypoglycaemia: in other words whether he should inject soda or saline alone or mixed with glucose.

J. H. T. W.

PLAGUE.

PATERSON (A. R.). **Notes on the Incidence of Plague in Kenya in Relation to a Recent Migration of Rodents, and on an Experiment in Eradication carried out by a Native Tribe.**—*Proc. Internat. Conference on Health Problems in Trop. America.* 1924. pp. 591–612. With 4 figs. [2 refs.] [United Fruit Company, Boston, Mass.]

The author describes the geography of Kenya Colony and gives a history of plague in the countries bordering on the Victoria Nyanza. To-day plague is endemic over a large area of the Kikuyu country in the Highlands of Kenya and also over a large part of the Nyanza Province, of which Kisumu is the capital. The three species of "domestic" rodents in Kenya are :—

1. *Rattus rattus kijabius* } (*Mus rattus.*)
   " " *frugivorus* }
2. *R. coucha ugandae,* known as the "*multimmate*" rat since the female bears 10 pair of mammae as against the 5 pairs characterizing *M. rattus.*
3. *R. norvegicus* (*M. decumanus*) ; comparatively unimportant.

Two map diagrams are given showing the infected area and area of distribution of *R. rattus kijabius* prior to and in 1913. Two other maps show the distribution of "domestic" rats and of plague in 1921.

The population consists of primitive Africans living in round huts with mud walls and grass roofs. The staple food is grain, stored in small grass-roofed granaries close to the huts. Conditions for house rats are ideal ; it would appear that the average rat population of each hut is about 15, and as many as 60 rats have been killed in one hut. The story of the campaign against the rats which has lasted for three years is interesting. The people are fairly active in killing rats. But, although the total rat population has been reduced, it is not possible, at present, to show a corresponding diminution of plague.

J. H. Tull Walsh.

HUNTER (R. N.). **Plague in Kenya. (From the Records of the Medical Department).**—*Kenya Med. Jl.* 1925. June. Vol. 2. No. 3. pp. 75–85.

The origin of plague in Kenya and period at which it appeared are unknown. Continued absence of plague from Mombasa suggests that the disease was not imported from India. The relation of geographical and meteorological conditions is unknown. The disease is primarily a disease of rats and the occurrence of human cases is in direct relation to rodent plague. The rats involved are : *R. rattus norvegicus, R. rattus kijabius* and *frugivorus.* There are areas of country in which plague is never absent for any considerable time ; from time to time epizootics and epidemics occur. Rats travelling in grain or other merchandise, by train or otherwise, may play a part in the spread of plague. It is not known what are the fleas or other insect vectors. The disease is mostly bubonic in type, septicaemic and pneumonic cases are common, true inspiration pneumonia is rare. The mortality is usually about 75 per cent. Prophylaxis is a matter of separating man and his food from the rat by applying sanitary principles, the chief of which is housing. No known methods

of rat destruction are sufficiently effective to influence permanently the rat population. Quarantine and segregation have little effect in the control of the disease. Inoculation with anti-plague vaccine is valuable as a means of personal protection only.

J. H. T. W.

RAYNAUD (Lucien). **La peste en Algérie. Epidémies de peste dans la régence d'Alger. Cas de peste survenus dans la colonie de 1899 à 1924.**—*Arch. Inst. Pasteur d'Algérie.* 1924. Sept. Vol. 2. No. 3. pp. 303–361. With 5 charts on 3 folding plates & 4 charts in text. [73 refs.]

The author considers the various epidemics of plague before the French occupation and subsequently, giving, so far as is possible, statistics of cases and of mortality. He points out that to other advantages which France has given to the people of North Africa means of defence against plague may be added. From an epidemiological point of view bubonic plague is the most common form and is, as in general, the least fatal. When a patient is brought—or walks—to hospital with enlarged inguinal glands and little fever the case may be mistaken for adenitis due to some other infection and a bacteriological examination should always be made. Cases of pneumonic plague, primary or secondary, occur in general, mixed epidemics; or may appear in small isolated epidemics among families. Several examples of such epidemics are recorded. Septicaemic plague occurs with rapid death. Dr. Raynaud believes that bubonic plague may spread from man to man by means of fleas infected from a human source, *e.g.*, *Pulex irritans*. He gives references in support of this belief. Table 7 gives, in diagrams, the percentage of fleas found on rodents in 1908–1909 in Algiers and Constantine; *Pulex* [*X.*] *cheopis*, 59 per cent. and 39 per cent.; *Ctenopsylla musculi*, 20 per cent. and 37 per cent.; *Ceratophyllus fasciatus*, 13 per cent. and 23 per cent.; and *Ctenocephalus serraticeps*, 6 per cent. and 4 per cent. The author holds that every ship should be freed from rats at least twice a year.

J. H. T. W.

COUVY. **Organisation de la lutte contre la peste dans la commune de Tananarive.**—*Ann. de Méd. et de Pharm. Colon.* 1925. Jan.–Feb.–Mar.–Apr. Vol. 23. No. 1. pp. 33–49.

The author reviews the progress of plague, in and around Antananarivo, from 1921 onwards. He describes the sanitary methods adopted, or necessary, for the prevention of the disease: Rat-proof houses and stores for grain or other food; destruction of rats by various methods; the keeping of all waste, from slaughter houses, markets, etc., in covered metal bins pending destruction, and notes the value of anti-plague vaccination. [*v.* this *Bulletin*, *ante* p. 376 (AUGAGNEUR); Vol. 21, p. 876 (THIROUX), p. 445 (CACHIN).]

J. H. T. W.

HOOD (Alexander). **A Small Outbreak of Pneumonic Plague.**—*Jl. Roy. Army Med. Corps.* 1925. June. Vol. 44. No. 6. pp. 459–460. [1 ref.]

The author records an outbreak of primary pneumonic plague among the Indian servants of the Soldiers' Home, Upper Topa, Murree Hills.

On the evening of Sept. 22 (?19) a sick man arrived at the servants' quarters from Rawalpindi. Eight servants sat with him all night. Next morning he was carried away on his charpoy and his further history is unknown. There was plague at the time in Rawalpindi. On the evening of the 24th the eight servants were complaining of "fever." Major Hood saw these patients on the 25th. "As soon as one entered the first patient's godown the likelihood of an infectious pneumonia presented itself and one departed hurriedly to don mask, gown and gloves before making further examination. The reasons were: Firstly, the sputum, which was unlike any one had seen, resembling pure serum streaked with blood and slightly frothy, deposited all over the floor of the room; secondly, the look of horror on the patient's face, not a look of anxiety, but sheer dread. Examination showed all eight to be in much the same condition. The look of horror was present in all, in different degrees. The physical signs in the chest were in all cases well marked, coarse bubbling râles being a feature. No buboes were present. The progress of the disease was dramatic, intense dyspnoea and prostration; and by September 27th all the eight were dead. Diagnosis had been confirmed by finding the sputum full of *B. pestis*." Isolation sufficed to protect all the attendants on the sick and the surrounding population. No further cases occurred. The outbreak is of interest because it was so definite. The infection could only have come from the sick man passing through . . . there were no other plague cases nearer than Rawalpindi, 40 miles by road.

J. H. T. W.

Teissier (P.), Reilly (J.), Cambessédès & Cathala. **Forme exanthématique de la peste bubonique.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1925. June 4. Year 41. 3rd Ser. Vol. 49. No. 19. pp. 824–831.

The authors describe, in detail, a case of bubonic plague with a general pustular eruption like smallpox. The patient, a groom aged 35, was admitted into the Claude-Bernard hospital on October 4th, 1924, as a case of smallpox. On admission the temperature was 38° C.; there were painful, inflamed glands in the neck below the angle of the jaw and a general pustular eruption. Puncture of the glands and examination of the fluid from the pustules gave evidence of the presence of *B. pestis*. The diagnosis was altered and serum treatment given. On October 6th the buboes and eruption were increased and the temperature, in spite of the serum treatment, was 39·6° C. In addition to the inflamed glands in the neck there was inflammation around the glands in the right inguinal region and one large bubo. The left groin was also affected. The patient steadily became worse, with high fever (40·2° C. and 41·2° C.) and delirium. He died on October 7th. Owing to special rules for contagious diseases the autopsy was performed an hour and a-half after death. The lungs were congested and contained haemorrhages and infarcts. The liver was pale with necrotic spots and the spleen showed a necrotic abscess; minute abscesses were also found under the cortex of the kidneys. Bacteriological examinations proved that it was a case of plague. Anti-plague serum was given in sufficient doses, but evidently not in time, as the man had been ill for some days before he was admitted to hospital and the disease rightly diagnosed.

J. H. T. W.

URIARTE (Léopold). **La ponction ganglionnaire dans la peste bubonique.**—*C.R. Soc. Biol.* 1925. Mar. 27. Vol. 92. No. 11. pp. 901–903. [1 ref.]

The author's experience leads him to believe that in cases of glandular buboes when diagnosis is doubtful puncture of the glands is unsatisfactory. He advocates removal of the glands. They are then ground up and mixed with physiological salt solution for inoculation into guineapigs. They are also carefully cut into sections for microscopic examination and for cultures. In 7 cases in which puncture of buboes had failed to provide a diagnosis, extirpated glands supplied cultures and infected guineapigs with Yersin's bacillus. In 10 other cases where puncture proved negative positive results were obtained in two cases.

J. H. T. W.

CHOKSY (N. H.). **The Diagnosis of Pneumonic Plague.** [Correspondence.]—*Brit. Med. Jl.* 1925. July 4. pp. 37–38.

The writer refers to the early diagnosis of pneumonic plague and plague pneumonia as at times beset with considerable difficulty in the absence of physical signs during life, and also of the characteristic sputum, etc. At the autopsy, however, deep-seated and localized foci of infection or infarcts, or even solid consolidation, may be found and give pure cultures of the *Bacillus pestis*. [*v.* this *Bulletin*, Vol. 22, p. 376 (SHARP); Vol. 21, pp. 876–877 (COLOMBANI); Vol. 21, pp. 443–444 (JORGE); Vol. 20, pp. 743–744 (TSURUMI & others); Vol. 19, pp. 542–543 (Review).]

Dr. Choksy records "an isolated instance of plague pneumonia causing infection of the bubonic type. . . . . An English plague nurse working at the Arthur Road Hospital (Bombay) had severe coryza with injected eyes, and was advised to rest. Whilst bending over a bubonic plague patient to feed him he happened to cough and some sputum went into one eye. Within two days she developed parotid and cervical buboes with considerable oedema of the neck and pharynx; oedema of the glottis soon supervened, and death occurred within five days."

J. H. T. W.

FRANÇA (C.). **Au sujet de la peste pulmonaire primitive, à propos de la communication de J. Renaud.**—*Bull. Soc. Path. Exot.* 1925. Jan. 14. Vol. 18. No. 1. p. 16.

J. RENAUD had suggested that in primary pneumonic plague outbreaks there existed specially pulmonotropic strains of *B. pestis*—"races pulmotropes." Dr. França remarks: If I were present during an epidemic of pneumonic plague I should isolate the germ and test the matter of special lung-tropism by means of subcutaneous inoculations into receptive animals. I find it more natural to admit the possibility of pulmonotropic races of the bacillus than to accept the theory of association of bacteria as the cause of pneumonic plague put forward by R. JORGE, Norman WHITE and Ch. NICOLLE. [*ante*, p. 376, NICOLLE.]

J. H. T. W.

DI MATTEI (Eugenio). **Su di alcuni casi di polmonite diplococcica in individui pestosi.**—*Policlinico.* Sez. Med. 1925. Mar. 1. Vol. 32. No. 3. pp. 117–132. [23 refs.]

During the outbreak of plague in Catania during 1921 three fatal cases clinically diagnosed as lobar pneumonia attracted the author's attention owing to the bacteriological conditions. All three cases occurred in one family (daughter, mother, father) and are described at length. In case No. 1 (daughter) numerous diplococci of Fraenkel were found, but no plague bacilli. Inoculated into a guineapig, material from this case gave Fraenkel's diplococcus. Case No. 2 (mother) showed exclusively the same germ in the lungs ; in the spleen a few bacilli like *B. pestis* were present. An inoculated guineapig died in 48 hours. In this animal plague bacilli were found in addition to the pneumococci. Case 3 (the father) showed only Fraenkel's diplococcus from the lungs. In the blood of the heart and in the spleen there were a few plague bacilli. A guineapig inoculated from this case died in 16 hours. The author considers the question of the true cause of the pneumonia and whether these were cases of true pneumonic plague. He gives numerous references to cases in which various germs have been found with plague bacilli.

J. H. T. W.

KARSENTY (André). **Conception moderne de l'épidémiologie de la peste. Les réservoirs du virus pesteux.**—*Médecine.* Paris. 1924. Dec. Vol. 6. No. 3. pp. 226–231. [4 refs.]

The author compares the classical conception, that the plague-infected rodent is the propagator of the disease, and that the epidemic is subordinate to the epizootic conditions, with the modern conception of reservoirs of plague infection in carriers. This conception, he thinks, explains the variations in severeness of epidemics and is the interpretation of the recurrence of plague in old foci. Since man, apparently healthy, may harbour the plague bacillus it is indispensable, in French Africa, to make a bacteriological examination of all natives with buboes who may be carriers. [See this *Bulletin*, Vol. 21, p. 878 (LEGER & BAURY).]

J. H. T. W.

WU LIEN TEH, CHUN (J. W. H.) & POLLITZER (R.). **Plague Transmission through the Ectoparasites of the Tarabagan.**—*Amer. Jl. Hyg.* 1925. Mar. Vol. 5. No. 2. pp. 196–201. [10 refs.]

The authors, working experimentally with the tarabagan flea—*Ceratophyllus silantievi*—and the tarabagan louse (identification not certain : either *Haematopinus lyriocephalus* Burmeister, or *Linognathoides spermophili* Cunnings 1914) record the following conclusions :—

" Now that we have finally succeeded in infecting a healthy animal [guineapig] by means of tarabagan fleas, it may be stated that they undoubtedly play an important part in the spread of the infection, not only from animal to animal, but also from animal to man ; we are convinced that they were involved not only in the constant Siberian outbreaks, but also in others where a direct contact with the infected animals occurred. The lice are certainly an important link in the propagation of the disease from animal to animal—our observation on the lice and fleas from one and the same naturally infected tarabagan

is certainly illustrative in this respect. It is at present difficult to gauge how far the lice actually spread the disease to man. A few outbreaks, where the affected had contact with tarabagan skins only, seem somewhat suggestive of their rôle. Our observations, made both on the fleas and the lice, thus show that any attempt to control the handling of tarabagans and the trade with their skins must include not only bactericidal, but also insecticidal measures."

Experiments with the tarabagan tick (*Rhipicephalus* (*R. haemaphysaloides*?)) gave negative results.

J. H. T. W.

i. Orlov (E. I.). *Cynomys fulvus* **Licht. I. Biological Observations.**—*Rev. Microbiol. et Epidémiol.* Saratov. 1925. Vol. 4. No. 1. English summary pp. 91–92. In Russian pp. 58–65. With 3 text figs.

ii. Nikanorov (S. M.). **Significance of** *Cynomys fulvus* **Licht. as a Carrier and Transferrer of Plague Infection.**—*Ibid.* English summary pp. 93–94. In Russian pp. 66–69. With 1 chart in text.

i. The recorded observations on the natural history of *Cynomys fulvus* were made in 1924 in the steppes adjoining the Volga on the right and left banks of the river Eruslan near Diakovka.

ii. Under experimental conditions *C. fulvus* is very susceptible to plague. *B. pestis* is always found in great numbers in the blood and organs. Serious epizootics have not, however, been observed among them under natural conditions. Their rôle in carrying and transfer of plague to man cannot be of any consequence.

J. H. T. W.

di Mattei (Eugenio). **Difficoltà ed incertezze nella diagnosi batteriologica della peste dei murini. (Osservazioni e Ricerche.)**—*Ann. d'Igiene.* 1925. Mar. Vol. 35. No. 3. pp. 201–210. [1 ref.]

The author reviews, at length, the various laboratory methods used in the diagnosis of plague and the detection of *B. pestis*. He finds that in certain cases it is very difficult to make an absolute diagnosis even when it is fairly certain that a given rat is, like others, a plague carrier. The author gives certain detailed experiments as examples of the difficulty.

J. H. T. W.

Stevenson (W. D. H.) & Kapadia (R. J.). **Experiments on the Onset of Immunity after Inoculation with Haffkine's Anti-Plague Vaccine. The Absence of a "Negative Phase."**—*Indian Jl. Med. Res.* 1925. Jan. Vol. 12. No. 3. pp. 553–559. [5 refs.]

The two series of experiments, in which 560 rats were used, show: (1) That there is no "negative phase" or period of increased susceptibility of rats to plague after the administration of anti-plague vaccine, even within one and a-half hours after the operation; (2) that the production of immunity among rats commences within a few hours of inoculation and increases in amount till the 2nd or 3rd day after anti-plague vaccination. Fourteen days after inoculation—the limit of experiment—a considerable degree of immunity is still present.

J. H. T. W.

RAYNAL (G.). **Essai de vaccination antipesteuse par voie buccale chez l'homme.**—*Bull. Soc. Path. Exot.* 1925. Mar. 11. Vol. 18. No. 3. pp. 235–238. [4 refs.] (Discussion pp. 239–241.)

The author begins his paper with references to the results of other investigators, concluding, with NICOLLE and CONSEIL, that the addition of bile to an oral vaccine is not necessary. The vaccine used by Dr. Raynal is called "Pestedo," and is in the form of "gelodiscs" which quickly become liquid in the intestine. They do not contain bile. Forty-eight Africans swallowed 7 discs daily for 3 days and were under the author's observation. Thirty were prisoners employed, more or less, in conveying sick to the hospital, or the dead to the burial ground. Eighteen were patients, mostly convalescent from diseases other than plague, in the hospital for natives. Two cases died, one during the period of oral vaccination, the other three days after. The rest, although more or less exposed to the chances of infection, remained healthy throughout the epidemic. During the discussion M. DUJARDIN-BEAMETZ remarked that the value of oral vaccination is not finally settled and that it would be dangerous to substitute that method for subcutaneous anti-plague inoculation. M. Marcel LEGER agreed that the question is not yet settled.

J. H. T. W.

i. MARUYAMA (Y.). **Ueber die Beziehungen zwischen Wachstum und Toxinbildung der Pestbazillen und der Wasserstoffionenkonzentration der Kulturflüssigkeit.**—*Taiwan Igakkai Zasshi* (*Jl. Med. Assoc. of Formosa*). 1925. Mar. No. 240. German summary p. 20. [In Japanese.]

ii. ——. **Experimentelle Untersuchungen ueber die Giftigkeit der Pestbazillen und ueber dieselben als Antigene.**—*Ibid.* 1925. Jan. No. 238. German summary pp. 1–5. [In Japanese.]

iii. KOSUGE (J.). **Histologische Studien an Pestbubonen.**—*Virchows Arch. f. Path. Anat. u. Physiol.* 1924. Vol. 253. No. 1/2. pp. 505–510. With 4 figs.

i. The author experimented with 10 races of *B. pestis* seeking the optimal hydrogen-ion content for growth and the changes occurring with change of pH. He found that the strongest toxin virulence occurred with pH 8·0 to pH 8·2 [*v.* this *Bulletin*, Vol. 21, pp. 444–445. (D'AUNOY).].

ii. Detailed laboratory experiments on animals. Does not contain anything new.

iii. It is hardly necessary to describe the histology of the plague bubo; but the work has been carefully done and the four micrographs are good.

J. H. T. W.

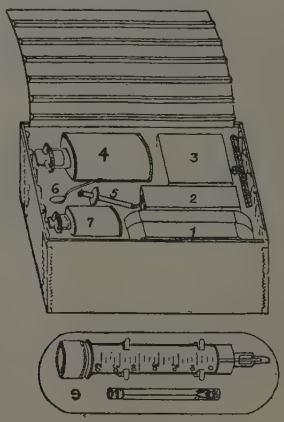
LABORATORY METHODS.

SIMON (Charles E.) & SCOTT (Joseph M.). **The Paul Test in the Diagnosis of Smallpox.**— *Jl. Lab. & Clin. Med.* 1925. Apr. Vol. 10. No. 7. pp. 562–569. With 7 figs. on 2 plates. [12 refs.]

The authors have previously [this *Bulletin*, Vol. 21, p. 330] drawn attention to the value of the Paul method of diagnosis of smallpox, an account of which was given in this *Bulletin*, Vol. 19, p. 440. The present article emphasizes the conclusion that, histologically controlled, the method is reliable and deserves general application. The material used in the examination, dried exudate, etc., retains its infectivity for some time, and the authors [at Baltimore] have received specimens from China, which still retained their virulence. In one instance the virus was found to retain its activity in a dried drop preparation, at ice-box temperature, for 387 days.

The authors have now applied the Paul test to 247 examinations; in 44 out of the 45 cases of smallpox, the macroscopic reaction was in itself sufficient for diagnosis. In chickenpox, negative results are so constant that a doubtful reaction is suspicious and calls for further examination. Pyogenic infections of the rabbit's cornea *per se* do not interfere with the reaction. A negative macroscopic result will probably always warrant a negative diagnosis as to smallpox, if satisfactory material is available for the examination.

Finally, in view of the confirmed observation that the virus may be demonstrated in the nasopharyngeal secretion of convalescents, the authors advise that a careful rhinoscopic examination should



1. Metal case containing syringe and platino-iridium needle.
2. Cardboard box containing tablet phials.
3. Cardboard box containing "Vaporole" capsules.
4. Bottle containing methylated spirit.
5. Bazaar-made burner with wick.
6. Tea spoon.
7. Bottle containing glycerine of carbolic acid and rectified spirit.
8. File.
9. View of syringe and needle in open metal case.

[Reproduced from the *Indian Medical Gazette*.]

be made in all smallpox cases before releasing them from quarantine, followed, if necessary, by the application of the Paul test to the nasopharyngeal secretion.

E. Hindle.

Tomb (J. W.). **A Useful Hypodermic Outfit.**—*Indian Med. Gaz.* 1925. Jan. Vol. 60. No. 1. pp. 32–33. With 1 text fig.

Description of a cheap and efficient hypodermic outfit for colonial and rural practice. The whole is contained in a stout cardboard box about 7½-ins. by 4 ins. by 2½ ins., lined with corrugated cardboard and half filled with cotton wool to protect the contents. The various articles and their arrangement in the box are shown in the accompanying sketch.

E. H.

Vincent (Maurice). **Seringue pour prélèvement d'échantillons de sang à l'abri de l'air.**—*C. R. Soc. Biol.* 1925. Apr. 10. Vol. 92. No. 13. pp. 1022–1024. With 1 text fig.

Description of an ingenious syringe, prepared by Ad. Chatellier, by means of which specimens of blood can be removed from the body and centrifuged without exposure to air, and with the minimum exposure to paraffin. The original article should be consulted for details.

E. H.

Curasson (G.). **Sur la toxicité du chinosol employé comme agent conservateur dans les sérums thérapeutiques.**—*Bull. Soc. Path. Exot.* 1925. Feb. 11. Vol. 18. No. 2. pp. 221–222. [1 ref.]

Chinosol, or quinosol, recommended by Nicolle for the preservation of serum, possesses the advantages of being a very strong antiseptic, and also producing no appreciable change in the serum to which it is added. Ordinarily it is employed in the proportion of 0·2 per cent., but at Bamako [West Africa] the author uses 1 per cent., and finds that this is more satisfactory, in order to counteract the mistakes in sterilization often made by the native staff. Two per cent. was employed last year, but the injection of large doses, especially when administered intravenously, caused the death of certain animals. When employing sera preserved in this manner, therefore, it is important to remember the toxicity of chinosol.

E. H.

Orpen (L. J. John). **The Use of Saturated Organisms (Saturation Test) in Diagnosis.**—*S. African Med. Rec.* 1925. Mar. 28. Vol. 23. No. 6. pp. 120–121.

A test depending on the curious fact that when a serum is heated to a certain point the agglutinating components of its agglutinins are destroyed, while the combining components are left intact, so that an organism treated with such serum is not agglutinated by it, and, moreover, cannot subsequently be agglutinated by a similar unheated serum. The temperature required to produce this change has not been worked out in detail; 70° C. for one hour is insufficient, whilst above 80° C. the combining properties of the serum are destroyed.

The application of this test in a suspected typhoid case which agglutinates both typhoid and paratyphoid is as follows :—

"A known typhoid organism is kept in stock which has been saturated with heated paratyphoid serum, and consequently only agglutinates with typhoid. This organism is put up against the patient's serum in a single dilution of any fairly low titre. A positive result can only mean typhoid. Similar tests would be made, as usual, at the same time with paratyphoid or other organisms similarly saturated with allied sera."

The details of this test have not yet been elaborated, but it promises to give a simple and rapid method of diagnosing such infections as typhoid, melitensis, etc.

E. H.

DAVIS (Gordon Ernest). **A Note on the Destruction of Complement in Human Serum by Heating at 55° C. for Fifteen Minutes.**—*Jl. Lab. & Clin. Med.* 1925. Mar. Vol. 10. No. 6. p. 475.

Five hundred sera of routine blood specimens received for the Wassermann test were heated at 55° C. for 15 minutes only, instead of from 20 to 30 minutes as formerly used. The results clearly showed that the shorter period is sufficient to destroy the complement in human serum.

E. H.

DRY GUINEAPIG COMPLEMENT.

The attention of laboratory workers is called to a preparation of dry guineapig complement, which is stated to be reliable and uniform in strength and to keep well almost indefinitely. The liquid complement is prepared by dissolving 1 part in 9 parts of water. Dr. H. B. NEWHAM informs the writer that he has tested this preparation for Wassermann reactions against ordinary complement from fresh guineapigs' blood, and obtained exactly parallel results. The preparation is supplied by the Pharmaceutisches Institut Ludwig Wilhelm Gans A.-G., Oberursel, Germany.

E. H.

THRO (Wm. C.). **Modifications of the Sahli Hemoglobinometer.**—*Jl. Lab. & Clin. Med.* 1925. Mar. Vol. 10. No. 6. pp. 491–493. With 1 text fig. [1 ref.]

The chief fault of the "Sahli" is the fading of the colour standard, so the writer has devised certain alterations in the instrument. The tube containing the standard colour is made like a small test-tube with an accurately gauged bore, 7 mm. in diameter, and closed with a rubber stopper. The standard haematin solution is composed of oxalated blood, 1 cc. ; HCl tenth normal, 30 cc. ; and glycerine, 69 cc. This solution is poured into the tube, and if it fades can be easily renewed.

When making tests a 1 per cent. acid haematin solution of the blood is poured into a flask and well shaken, and then placed in the colour tube and compared with the standard in the usual manner. It has been found advantageous to bring the colour tube and the graduated tube closer together (1 mm. apart), and to hide the entire length of the tubes with the exception of an aperture 16 mm. square

covered with a piece of ground glass. With these modifications the writer finds the Sahli is one of the best haemoglobinometers, and gives results of examinations of the blood of students supporting this view.

E. H.

ROBIN (A.). **Sur une nouvelle méthode d'enrichissement des selles.**—*C.R. Soc. Biol.* 1925. May 1. Vol. 92. No. 14. pp. 1099–1100.

A modification of Téléman's method of concentrating faeces for the examination of cysts and ova. Finding that fragments of cellulose interfere with this examination the author recommends the application of Schweitzer's reaction to the faeces, in order to dissolve the cellulose.

The complete method is as follows :—

(1) Introduce about 14 cc. of Schweitzer's reagent [ammoniacal solution of hydrated cupric oxide] into a flask containing 20 glass beads, and then add a small portion of faeces (2-3 gms.) and shake the flask until the contents are thoroughly mixed.

(2) Pour the liquid into two centrifuge tubes and centrifuge for about one minute.

(3) Throw away the supernatant liquid and wash the tubes in water without disturbing the sediment; then add to each tube 4 cc. of saline and shake well.

(4) Filter through a metal gauze with apertures of 340μ, into a wide-mouthed flask.

(5) To each 4·5 cc. of the mixture add HCl 22 cc.; formol, 34 cc.; saline, 44 cc. Shake for 15 seconds; then add 12·5 cc. of ether, and shake for another 15 seconds.

(6) Pour the mixture into centrifuge tubes and centrifuge for about a minute. Pour out the liquid and examine the sediment.

With this method protozoal cysts and eggs of helminths are very clearly shown, and are said to be very little modified in their form and structure.

E. H.

ASHESHOV (Igor-N.). **Sur un mode avantageux de préparation des milieux de culture.**—*C.R. Soc. Biol.* 1925. Feb. 13. Vol. 92. No. 5. pp. 360–361. [1 ref.]

The author recommends a culture medium said to be cheaper and to give better results than those of MARTIN and DOUGLAS, which are based on the employment of the products of albuminoid digestion. The medium is prepared as follows :—

One kilo of minced lean meat is mixed with 1,000 cc. of 1 per cent. HCl containing 5 gms. of Pepsin [Merck 1 : 100]. The following day the mixture is neutralized by the addition of 10 per cent. Na OH, and then gradually heated to 80° C., keeping the mixture stirred the whole time. Then it is suddenly cooled; and after 1-2 hours the clear liquid decanted off. This is the "Peptonized part." The residue is again minced, preferably with 100 gm. of liver, but this is not essential. Na OH is then added until the mixture is alkaline, and then 5 gm. of "Pancreatinum absolutum U.S.P.IX Merck." Chloroform is added as an antiseptic and the mixture allowed to digest for 5 to 7 days. This "tryptamine part" is then mixed with the "peptonized part" and the mixture sterilized. The liquid is finally decanted off and constitutes the concentrated broth, which, before use, is diluted so that each 100 gm. of meat employed gives one litre of broth.

E. H.

i. Laidlaw (P. P.). **On Structures which develop in Certain Culture Media and resemble Colonies of Micro-organisms.**—*Brit. Jl. Experim. Path.* 1925. Feb. Vol. 6. No. 1. pp. 36–39. With 1 plate. [1 ref.]

ii. Barnard (J. E.). **Cultures from Single Cells.**—*Ibid.* pp. 39–40. [2 refs.]

i. The formation of artificial colonies on the surface and in the depths of certain culture media, originally described by F. W. Twort and D. N. Twort, is described in detail, and the author shows that the artefact is due to the separation of calcium and magnesium soaps out of the medium.

ii. A method of growing bacterial colonies, etc., from single organisms. The organism or cell to be grown is spread on a slide and then covered with a selenite cover glass. The organism or cell to be cultivated is then covered with a minute drop of mercury on the cover glass and the preparation exposed to a bactericidal light source, such as a mercury vapour lamp. The mercury protects the organism underneath it from the action of the rays, but all the others are killed. The cover glasses can be obtained from Messrs. Hawksley & Sons, 83, Wigmore Street, W.

E. H.

Battaglia (Mario). **Metodo per colorare i tripanosomi nei tessuti fissati. Nota di tecnica microscopica.** [A Method of Staining Trypanosomes in Fixed Tissues.]—*Pathologica.* 1925. Jan. 1. Vol. 17. No. 387. p. 23.

The author recommends a modification of the Koch-Ehrlich-Gram method.

The tissues are fixed and paraffin sections prepared in the usual way. The sections are stained for two hours in Carbol Gentian Violet (1 cc. of a saturated alcoholic solution of the stain to 100 cc. of ·2 per cent. phenol in distilled water); then passed into Lugol's iodine solution (iodine, 1 gm.; potassium iodide, 2 gms.; distilled water, 300 cc.) for one hour, the solution being changed two or three times; then into absolute alcohol until no more colour comes out, and finally mounted in balsam.

The trypanosomes are said to be stained very clearly, periplast, nuclei, granules, etc., being coloured brownish violet, whilst the ectoplasm is a pale blue.

E. H.

Ramón y Fañanás (J.). **[El método de Ramón y Cajal, al uranoformol, aplicado a la coloración de microbios y parásitos en los tejidos.]**—*La Medicina Canaria.* 1924. Nos. 8 & 9. [Summarized in *Rev. Española de Med. y Cirug.* 1925. Jan. Vol. 8. No. 79. pp. 31–32.]

The following method for staining bacilli and parasites in tissues is described: Pieces, 2-2·5 mm. thick are fixed for 8-24 hours in a solution containing uranium nitrate 1 gm., neutral formol 15 cc., in distilled water 100 cc. They are then rapidly washed in distilled water and placed in a solution of silver nitrate 0·75-1·5 per cent. (according to the thickness of the fragment) for 24-72 hours at room-temperature; after being again rapidly washed in distilled water they are placed in a reducing bath of hydroquinone 2 gm., formol 6 cc., anhydrous sodium sulphite 2·5 gm., distilled water 100 cc.; the fluid becomes a pale yellow, and in this they

are left for 12-24 hours. These times can often be reduced so that the final sections can be made in 24 hours if the original piece of tissue taken was very thin, 1 mm. Should a contrast stain be desired the Giemsa method may be employed as well. It is claimed that the results are good and constant, the process simple, and the risks of too little differentiation or excessive decolorization less than with aniline dyes.

H. Harold Scott.

Kingsbury (A. Neave) & Kanagarayer (K.). **On the Technique and Significance of the Rosindole Reaction, applied to Urine.**—*Indian Med. Gaz.* 1925. Apr. Vol. 60. No. 4. pp. 161–163. With 1 chart in text. [3 refs.]

The authors have applied the rosindole test to urine (see this *Bulletin*, Vol. 19, pp. 81–82) employing a slight modification of Gore's cotton-wool plug method. The mouth of the test-tube is closed by a diaphragm of filter paper held in position by an indiarubber band. On this paper is placed 3 drops of the persulphate solution, followed by 3 drops of the p. dimethyl-amino-benzaldehyde solution. The contents of the tubes are kept heated by immersion in boiling water for 7 minutes. The rose colour which develops on the filter paper tends to fade when the tubes are no longer heated, so readings should be made at once.

By dipping filter papers in weak solutions of neutral red it is possible to approximate the rose colour, and by matching the colours against those obtained with known indol solutions, a quantitative test can be made.

Applying this test the authors find that a positive result does not indicate the presence of indican in urine, thus contradicting Gore's suggestion. [See this *Bulletin*, Vol. 22, p. 310.] The urine of a number of patients was examined both by the Obermeyer test and the rosindole reaction (referred to as R.I.), and it was found that the percentage of positive cases decreased in nephritic cases and increased in liver insufficiency cases.

E. H.

Harvey (W. F.). **Bacteriological and Laboratory Technique. Section XI. Pathogenic Material Examination.**—*Indian Jl. Med. Res.* 1925. Jan. Vol. 12. No. 3. pp. 503–535.

This section, numbered P4, P5, and P6, deals with the examination of material for organisms, without reference to pathogenic qualities. The classification adopted follows that of the Manual of Determinative Bacteriology issued by the Committee of the American Society of Bacteriologists.

E. H.

Bock (Joseph C.) & Gilbert (Max). **A Drying Apparatus for Laboratory Vessels.**—*Jl. Lab. & Clin. Med.* 1925. Apr. Vol. 10. No. 7. pp. 579–581. With 1 text fig.

A stream of compressed air is passed through a coil heated by a flame. The heated air escapes through one or several perforated tubes over which the vessels to be dried are suspended.

E. H.

Asheshov (Igor-N.). **Préparation des membranes en collodion graduées.**—*C.R. Soc. Biol.* 1925. Feb. 13. Vol. 92. No. 5. pp. 362–363.

A method of producing membranes of different porosities, by adding small quantities of amyl alcohol to diminish the permeability. Those interested should consult the original article.

E. H.

League of Nations. Health Organisation. Reports on Serological Investigations presented to the 2nd Internat. Conference on the Standardisation of Sera & Serological Tests held at the Pasteur Institute in Paris in November, 1922.—V—Serodiagnosis of Syphilis. pp. 169–300.

League of Nations. Health Organisation. Investigations on the Serodiagnosis of Syphilis. Report of the Technical Laboratory Conference. (Held at Copenhagen, November 19th to December 3rd, 1923.) (With two annexes.) 183 pp.

LABORATORY REPORTS.

Transactions of the Royal Society of Tropical Medicine and Hygiene. 1924. Nov. 20 & Dec. 11. Vol. 18. Nos. 5 & 6. pp. 237–248. With 8 figs.—**Laboratory Meeting.**

Most of the exhibits have been elsewhere described, and these will not be referred to here. Dr. H. B. Day demonstrated charts and photographs of cases of Egyptian Splenomegaly and sections illustrating its pathology. The disease is said to be the result of bilharzial infection, and slides were shown illustrating the irregular cellular infiltrations in the liver produced by deposited ova of *Schistosoma mansoni*, and also the dense fibrosis that may result. Captain Dye showed photographs of cases of splenomegaly due to schistosomiasis in Nyasaland. The intermediate host of *Sch. mansoni* in this region is a species of *Planorbis* allied to *P. sudanicus* Martens, and photographs were shown illustrating the pools in which it is found, and which are used as latrines by the children.

Dr. Jaroslav Drbohlav gave a demonstration of a method for the cultivation of *Entamoeba histolytica* worked out by himself and Dr. W. C. Boeck :—

The culture media employed were slants of coagulated egg (Dorset) or blood-agar, covered with Ringer's or Locke's solution containing human serum diluted 1 in 8, or a white of an egg to one litre of Ringer's or Locke's solution. The latter fluid is preferable, as it is slightly bactericidal.

For inoculation it is necessary to take a small piece of blood-stained mucus from a fresh warm stool and inoculate into a warm medium, and at once place the tube in the incubator at 37° C. It is necessary to make transfers every two to four days.

The tenth sub-culture of a strain of Entamoeba obtained from a case of amoebic dysentery in England was shown at the meeting.

Dr. Hanschell showed photographs, reproduced in the *Transactions*, of a case of gonorrheal Keratodermia blenorrhagica in a native of India. The patient, a lascar, suffered from gonococcal urethritis, prostatitis and vesisitis, with synovitis and periarthritis of right knee and wrist, and showed on the external surface of both arms many small horny excrescences. Subsequently, these grew larger, up to 1 inch in diameter, and spread all over the body and scalp; also, marked hyperkeratosis of the palms and soles developed. During six months there was no improvement until during the last month, when gonococcal

vaccine was given intravenously, and thyroid by mouth. The patient at once showed very marked improvement, all the symptoms gradually subsiding.

Colonel S. P. JAMES showed specimens of *Anopheles maculipennis* from Sheerness, fed on a case of benign tertian malaria in England. Malarial zygotes developed in a small number of this batch, but cysts containing "black spores" were present in the majority. Encysted trematodes attached to the alimentary canal are frequently found during dissection of Anopheles in England, as well as abroad, and one of these was demonstrated. Col. JAMES also showed specimens of larvae mounted more than two years ago by the following method :—

Using melted dental wax and a ringing machine, make a cell of the requisite depth on a glass slide. By means of a pipette transfer a larva from the formalin solution (4 per cent.) to the cell and, if necessary, add more formalin to fill the cell. Arrange the larva in a good position and cover the cell with a cover-glass. Fasten the cover glass with a ring of "Murrayite,"* and when dry add more layers with the ringing machine until the cell is hermetically sealed.

A method of showing the pigment and morphology of malaria parasites and Schuffner's dots was also described :—

Make the blood films or drops of only moderate thickness and allow them to dry in air protected from flies and dust. When dry, simply place them on their edges in a grooved porcelain staining trough, and fill the trough with Giemsa stain diluted 1 in 30. Stain for 24 hours, wash for a few seconds in a 10 per cent. solution of sodium hyposulphite, then wash in tap water and afterwards in distilled water and allow to dry.

Dr. P. H. MANSON-BAHR showed a painting and photographs of kala azar pigmentation of the feet in a young European woman, who had been suffering from this disease for eighteen months. The dusky brown pigmentation was not only present on the feet and ankles, but also on the hands and elbows, and the lower abdomen. This case was resistant to antimony treatment, but at once began to improve when injections of 0·3 gm. neosalvarsan per week were administered.

Lt.-Col. H. MARRIAN PERRY exhibited a case of Xeroderma pigmentosum in which the variability of the skin lesions was well shown, ranging from freckles and diffuse pigmentation to raised irregular nodules. Sections of the latter showed marked epithelial infiltration, and illustrate the early carcinomatous changes which occur in some of these cases.

Professor STEPHENS showed specimens of blood from a case of sleeping sickness in which the auto-agglutination of the red blood corpuscles was very apparent. Dr. J. Graham WILLMORE showed a tumour of the suprarenal associated with intense fatty degeneration of the liver and obliteration of the endothelial system. Clinically, the stools resembled those of sprue cases, while bile was absent from the faeces, blood and urine.

E. H.

TANGANYIKA TERRITORY. **Report of the Dar-es-Salaam Laboratory, for the Year 1923.** [BUTLER (G. G.), Director.]—*Ann. Med. Rep. for the Year ending December 31st, 1923, Tanganyika Territory.* pp. 184–202. With 1 chart.

Tables are given illustrating the general routine examinations. 2·2 per cent. of the blood films of all nationalities contained microfilaria,

* A spirit proof cement sold by Messrs. Flatters and Garnett, Ltd., 309, Oxford Road, Manchester.

but the variety has not yet been determined. There is a sharp rise in the findings during April, when the rainfall is at its height, but all these figures refer only to the day blood of patients.

The blood films of a number of wild animals were examined and malaria-like parasites observed in a Cercopithecus and a baboon; trypanosomes were seen in Nycteris bats, and microfilariae in a fox, roan, and Agama respectively.

Under the examination of faeces it is interesting to note that the dysentery-like stool of a young female gorilla was found to contain numerous Entamoebae resembling *E. histolytica*, and eventually the animal succumbed to the infection in spite of emetine treatment.

A chart is given showing the malaria curves for European, Asiatics and Natives, respectively, and in association with these curves the author has plotted the rainfall, mean temperature and humidity and the Anopheline larvae finds. The curve of the latter is identical with the native malaria curve, but the mean humidity and temperature show no relation to the malaria curves. However, humidity is considered to be a main factor in the incidence of malaria and experiments are in progress to test this view.

For the transport of lymph the procedure is to pack in crushed ice and sawdust in special carrier boxes as advertized by GALLENKAMPF. Experiments showed, however, that at 24°-26° C. the contents of these boxes reached room temperature in about 18 hours, and therefore such packing is of little use if the destination is more than 24-36 hours away. During the year the number of cases of smallpox notified has fallen from 390 in 1922 to 210 in 1923, and this drop has been continued during 1924.

A number of experiments were made to compare the Kahn and Wassermann tests in syphilis and yaws and the following results obtained :—

"1. Judged on clinical grounds :—

"The Kahn and Wassermann tests give approximately parallel results in Syphilis, but the former appears to be rather more sensitive in Yaws cases.

"2. Judged on serological results, there is agreement between the Wassermann and Kahn tests in 81·2 per cent. of the sera sent for examination.

"3. Bismuth Sodium Potassium Tartrate affects the Wassermann and Kahn tests similarly, but the former test is more easily influenced than the latter and appears to run *pari passu* with the clinical symptoms : the Wassermann test appears to be of less value than the Kahn test in judging the progress of a case."

E. H.

UGANDA. **Annual Report on the Bacteriological Department for the Year ended 31st December, 1924.** [DUKE (H. Lyndhurst), Bacteriologist.]—11 pp. 1925. Entebbe : Govt. Printer.

The most important part of the report is concerned with trypanosomiasis investigations, and has been noticed elsewhere [*ante*, p. 529]. A severe outbreak of dysentery occurred at Kampala during the year, and for the first time *B. dysenteriae* (Shiga) has been isolated from Buganda natives, all previous cases that have been examined being referable to the Flexner bacillus.

Ankylostome eggs were found in 91·1 per cent. of native stools examined, and probably the infection rate is higher, but the writer

states that it remains to be proved whether, under normal living conditions, a few worms do the human host any harm. *Schistosoma mansoni* was also found to be a fairly common parasite.

E. H.

NIGERIA. **Annual Report on the Medical Research Institute for the Year 1923.** [CONNAL (A.), Director.]—*Ann. Med. & San. Rep. for the Year 1923, Nigeria.* Appendix I. pp. 1–29.

Blackwater Fever. Four cases were examined for spirochaetes by triple centrifugation of the blood, with negative results. Details are given of 12 cases in Europeans, 2 of which were fatal.

Relapsing Fever. A small outbreak occurred in Lagos during 1923, the only previous authentic record of its occurrence being in 1910. Guineapigs and monkeys were inoculated with citrated blood containing spirochaetes from one of the cases, and all the monkeys (4) became infected, but showed no relapses. The guineapigs never showed any signs of infection.

Leprosy. During past years various methods of treatment have been employed, but in 1923 it was decided to resort again to intravenous injections of Moogrol. Seven patients treated in this way all showed improvement, and similar results are reported by medical officers who had used Moogrol in out-stations.

Calabar Swellings. Ten more cases in Europeans have been obtained, in all of which the infection was contracted in Nigeria or in British Cameroons. The lapse of time between first exposure to infection and the first appearance of signs of the disease is given as one year or less in five instances; the shortest period is 3 months, the next 4 months and then 7 months, 9 months and 1 year; the other periods are 2, 3, 6, 7, and 10 years, respectively. Swellings occurred in 9 cases, and were absent in one. The worm appeared in the eye in 6 cases. The outline of the worm has been seen beneath the skin in 4 cases. Embryos of *Filaria loa* were observed in the blood in 3 cases, out of 7 examined. The swellings occurred in the upper limbs in all the patients; in early cases they persisted longer and the period of freedom was shorter than in older infections. In three instances the swellings had been absent for long periods. One case that received a course of intravenous injections of Stibenyl has shown no signs of infection since treatment, 18 months previously.

Filarial Embryos from the Skin. The skin of 55 natives was examined in Lagos, and embryos were found in 6. In 2 of these the embryos of *Agamofilaria streptocerca* were observed, in addition to *Onchocerca volvulus.* The cases were chosen at random and in no instance was there any appearance of lichenification, or other abnormality of the skin.

Experiments were made on the transmission of *Acanthocheilonema perstans,* a number of *Mansonioides africana* being fed on patients infested only with *perstans*; of 14 mosquitoes that fed, 1 showed a slightly larger larva in the thorax, and 3 unchanged larvae in the same region. No other developmental forms were observed. Sixty-two house flies were dissected, and in one specimen of *Musca domestica* the author reports that "numerous *Strongyloides* ova and larvae were seen." No amoebic cysts were found, but Herpetomonas occurred in the gut of 16 flies.

Entomology. A systematic examination was made of the mosquitoes collected by labourers from the vicinity of native houses. *Mansonioides africana* greatly outnumbered all other species; 4,027 were collected, of which 3,064 were dissected. Larvae of filaria were found in the proboscis of one, and in the muscles of the head and thorax of another. Small nematodes occurred in the stomach of two, and in a third much larger nematodes were present. Spirochaetes occurred in the stomach of five, and various amoebae and other Protozoa were occasionally observed.

E. H.

SERGENT (Edmond). **Rapport sur le fonctionnement de l'Institut Pasteur d'Algérie en 1923.**—*Arch. Inst. Pasteur d'Algérie.* 1924. Sept. Vol. 2. No. 3. pp. 423–438. With 4 plates.

During 1923, the heavy spring rains were followed by a serious outbreak of malaria and localities which had been exempt became infected; by means of quininization, mechanical protection, and destroying the mosquito larvae, 53 villages were protected. Reduction of cases of malaria accompanied by diminution in the spleen rate is well shown in two villages, where prophylactic measures have been continued for 15 years.

Photographs of four propaganda panels deal respectively with the prophylaxis of malaria, relapsing fever, camel trypanosomiasis (El Debab), and oriental sore, and comprise graphic representations of the causative organisms, the intermediate hosts and methods of infection, and, finally, how to avoid infection.

E. H.

MAURITIUS. **Report of the Government Bacteriological Laboratory for the Half Year ended 30 Sept., 1924.** [BARBEAU (L. G.), Supt. & Govt. Analyst.] [M.S. Report received from the Colonial Office.]

Mainly a record of the routine examinations of the laboratory. An antigen prepared from ox heart was employed concurrently with the usual antigen from human heart for the Wassermann reaction, and the results were concordant.

E. H.

MADRAS. **Report on the Working of the King Institute of Preventive Medicine, Guindy, for the Year 1923-24 (with Appendices).** [CUNNINGHAM (J.), Director, King Inst., Guindy.] pp. 29+2. With 3 charts. 1925. Madras: Supt. Govt. Press. [Price, 12 annas.]

During the year the Madras Government has issued an order sanctioning the general issue of glycerine lymph instead of lanoline lymph; supplies are now issued four times a month to vaccinators and must be used up within four days of receipt. During the hot weather vaccination was discontinued for four months in all districts. 2,184,590 cases of lymph were despatched during the year, the largest issue on record since the Institute was founded; moreover, the results show a distinct improvement on previous years as regards success rates. A chart is given showing the monthly case and insertion

success rates for glycerine lymph, both for primary and re-vaccination. A second chart shows these results grouped according to districts, with different types of monsoon prevalent. The success rates vary between 91·1 and 95·4 per cent. The average yield of pulp per calf has now risen to 23·5 gms., as opposed to 20·4 gms. last year.

A second investigation unit has now been authorized, and both units were engaged in the field for the greater part of the year. They were utilized to investigate an outbreak of cholera; an epidemic of relapsing fever in the Nilgiris; an outbreak of gastro-enteritis in the Alipuram Jail, Bellary; and to make a malarial survey of the Sappal Hills at Olavakot. The reports on cholera and gastro-enteritis, respectively, are contained in two appendices.

It is noteworthy that the success of the Institute from a financial point of view has been conclusively demonstrated, and the Government now recognizes that the Institute not only pays its way, but, in addition, brings in a handsome profit.

E. H.

New South Wales. **Fourteenth Report of the Microbiological Laboratory (Government Bureau of Microbiology) for the Year 1923.** [Ferguson (E. W.), Principal Microbiologist.]—*Rep. Director-General of Public Health, New South Wales, for the Year 1923.* pp. 132–133.

Section IV of this Report is concerned with the work of the Microbiological Laboratory. During 1923 only one case of plague occurred in N.S.W.; no infected animals were found, although 19,176 rats were examined, the fleas found on them being *Xenopsylla cheopis* (895); *Ctenopsylla musculi* (672); *Ceratophyllus fasciatus* (376); and *Ctenocephalus felis* (11). An interesting chart is reproduced showing the seasonal prevalence of the first three species of fleas on rats examined in the laboratory each year from 1909 to 1923, inclusive, from which it is evident that *Xenopsylla cheopis*, in most years, shows an enormous increase in numbers about the month of February. The Schick reaction was tried in various country schools and on an average about 27 per cent. gave a positive reaction. Boys were found to have a much higher degree of immunity than girls, about twice as many girls showing a positive reaction. As far as possible an attempt was made to immunize all susceptible children by the inoculation of toxin-antitoxin mixture, and by the extension of these operations it is hoped to eradicate diphtheria from the Colony. The report concludes with a useful summary of the present state of our knowledge of Australian ticks, including all described species.

E. H.

TROPICAL DERMATOLOGY.

CASTELLANI (Aldo). **Observations on Some Diseases of Central America.**—*Jl. Trop. Med. & Hyg.* 1925. Jan. 1. Vol. 28. No. 1. pp. 1–14. With 29 figs. and 1 coloured plate. [21 refs.]

This account refers to some thirteen skin conditions. Under the designation Guatemala nodules is described a nodular affection of the scalp associated with eye symptoms (conjunctivitis and keratitis) and erysipelas of the face, scalp and ears. The nodules, varying in size from that of a pea to a large nut, occur on the scalp, and less frequently on the body, mainly on the sides of the chest and close to the ribs. Deeply embedded in the subcutaneous tissue the nodules give the impression of being attached to the bone and may, indeed, develop under the periosteum. Within such lesions are found adult filariae and numerous microfilariae, which latter may be found also in the subepidermal tissue in other regions of the body far from the scalp, but only rarely in the blood. This filaria has been nominated *Onchocerca caecutiens* and is morphologically similar to *O. volvulus*. Treatment consists in surgical excision of the nodules. The affection is supposed to be transmitted by a species of simulium or by a culex mosquito. The geographical distribution appears to be extremely limited.

It is noted that rhinoscleroma, a rare disease of tropical countries, is a comparatively common affection in Guatemala. Three types of leishmaniasis are described: (*a*) espundia; (*b*) framboesiform (including infection of the ear); (*c*) Delhi boil. Two cases of mycotic stomatitis, observed in Honduras, showed patches of a thin translucid whitish film on parts of the oral and lingual mucosae, suggesting the early stages of leucoplakia. Cultures showed a yeast-like fungus and bacillus in apparent symbiosis. Dermatitis papulosa nigra occurs on the malar region of the face and on the forehead as non-pruriginous black or very dark brown papules, which may be cupoliform or flattened. First appearing in youth, these lesions increase in number and size as age advances; their etiology is unknown; they differ from ordinary and senile warts. The red mite of Panama and Honduras, giving rise to an extremely pruriginous papular eruption, is identified as *Trombicula tlalzahuatl*.

Four cases of Pinta are reported and discussed. Concerning such cases as seen in Honduras the conclusion is drawn that: (1) Yellow pinta covers two conditions, (*a*) due to the fungus of tinea flava, (*b*) of trophic origin associated sometimes with the occurrence of a saprophytic yeast-like organism; (2) black pinta includes cases of (*a*) the various chloasmata which may be associated with different saprophytic moulds and observed all over the tropics, (*b*) altered pigmentation following trichophytic infections, (*c*) tinea nigra occasioned by *Cladosporium mansoni*; (3) White pinta includes (*a*) leucoderma and (*b*) depigmentation associated with chronic mycotic infections.

Among the other conditions mentioned are myiasis, granuloma inguinale, pineapple estates pyosis, mossy foot and alastrim.

W. Jenkins Oliver.

CASTELLANI (Aldo). **Tropical Dermatology.**—*Proc. Internat. Conference on Health Problems in Trop. America.* 1924. pp. 485–498. With 2 figs. [United Fruit Company, Boston, Mass.]

A short account of some less-known tropical dermatoses, of varying etiology, personally investigated and reported in the literature by the writer. This contribution does not lend itself to further summarizing.

W. J. O.

KÄYSER (J. D.). **Cosmopolitische huidaandoeningen in de tropen.** [Cosmopolitan Dermatoses in the Tropics.]—*Herinneringsbundel Inst. v. Trop. Geneesk, Leiden.* 1924. pp. 92–103. With 11 figs. on 6 plates.

A discussion on the occurrence in the tropics, especially in Java, of more or less ubiquitous skin diseases, which, in the tropics, may show such aberrant characters as to be taken for quite distinct diseases, especially if the European variety of the disease is comparatively rare. The skin affections discussed here are: Ulcus phagedenicum, corresponding to the former hospital gangrene; the granuloma venereum, which is, perhaps, identical with the ulcus molle serpiginosum; a skin disease known as "Panu" among the Javanese, but probably identical with pityriasis versicolor; eczema marginatum, which among the Javanese is by no means restricted to the inguinal region; a skin disease much resembling Hebra's prurigo, but differing from it by its spontaneous recovery by the time the patient reaches the period of puberty; psoriasis, which occurs in Java (as it does in Ceylon, according to CASTELLANI, contrary to many other authors who have not observed this disease in the tropics), but less frequently than in Europe and usually (though by no means always) in a milder form; scabies, of frequent occurrence (25 per cent. of all skin diseases), but difficult to diagnose during the complication of pyodermia, rendering difficult the demonstration of the acari.

N. H. Swellengrebel.

URUETA (Eduardo). **"Pinta" or "Carate." (With Special Reference to Treatment.)**—*Proc. Internat. Conference on Health Problems in Trop. America.* 1924. pp. 524–531. [United Fruit Company, Boston, Mass.]

Pinta is defined as a group of tropical dermatomycoses caused by various species of fungi which live and grow in the superficial layers of the skin. The geographical distribution of the disease in tropical America is cited. The list of causative fungi includes members of the genera *Aspergillus, Penicillium, Monilia* and *Montoyella,* which fungi affect mainly the horny layers of the epidermis, while there may be changes in the prickle-celled layer and in the corium. "In later stages pigment cells are more or less destroyed." Fungous elements were more rarely found in the scales of the dull white than of the darker varieties of the affection. The climatic conditions and the slovenly habits of the natives are considered to be the main predisposing causes of infection. Commencing usually on the forehead the lesions may spread to involve the whole body, the uncovered areas being the first affected. "The chromatic scale of the varieties goes from the yellowish-violet, blue, and black, which are the more frequent, to the red less frequently seen in Colombia, until it reaches

the dull white which is the last stage of the disease." The red variety, produced by *Montoyella bodini*, is quoted as being the most pruriginous type. Treatment by local application of the varnish is recommended: Chrysarobin 5 gm., gutta-percha 5 gm., chloroform 80 cc. The leucodermic patches may be tattooed.

W. J. O.

Paes (Santana). **Nouvelle contribution à l'étude des dermatomycoses d'Angola.**—*Revista Méd. de Angola.* (No. especial 1e Congresso de Med. Trop. da Africa Ocidental. Vol. 4. 6a 7a e 8a Sessões.) 1923. Aug. No. 4. pp. 499–504. With 2 plates.

Three cases of dermatomycosis are reported from Loanda, from all of which the fungus was observed and cultured. Case I, Hebra's eczema marginatum showed *Epidermophyton cruris* (Castellani); Case II, Tinea tonsurans, *Microsporon audouini* [description suggests rather a microsporon of animal origin]; Case III, favus of scalp of nine years' duration gave *Achorion gypseum* (Bodin).

W. J. O.

Wolfe (W. B.). **Epidermophytosis.**—*U.S. Nav. Med. Bull.* 1925. May. Vol. 22. No. 5. pp. 562–573. With 5 figs. on 3 plates. [23 refs.]

Following a brief historical survey of the subject a general account of the disease is given as it affects particularly the interdigital clefts, hands, feet and genitocrural folds. Any local condition of hyperidrosis or of warm moisture favours the growth of the fungus. Stress is laid upon the macerated appearance of the skin in particularly the fourth interdigital space of the feet with the marked often painful fissure at the base of the fifth toe, also upon the sago-grain deep-seated vesicles on the hyperkeratotic areas noticeable especially in stokers, etc., working among hot boiler plates. As many as nearly 50 per cent. of the marines from one ship examined for other complaints on their return from Santo Domingo were found to be infected in either the genitocrural or volar regions. General therapeutic measures consist in thorough disinfection of the clothing and the avoidance of wearing thick warm socks, etc. For local treatment the regular bathing with potassium permanganate solution (10 per cent.) and the application of Whitfield's ointment is recommended. The hyperkeratotic epidermis should first be dissolved by potash and all deep-seated vesicles opened.

W. J. O.

de Mello (Froilano) & Paes (Santana). **Sur un tricophyton à culture faviforme agent d'une teigne du cuir chevelu.**—*Revista Méd. de Angola.* (No. especial 1e Congresso de Med. Trop. da Africa Ocidental. Vol. 4. 6a. 7a. e 8a. Sessões.) 1923. Aug. No. 4. pp. 505–513.

A general schematic classification of the trichophyton fungi is presented. A case of tinea tonsurans, concerning a negro child, is reported, which showed the presence of a trichophyton of the endo-ectothrix type. The cultural and mycological features are described, and the fungus identified as *T. faviforme* type *angolense*.

W. J. O.

Orol-Arias (C.). **La "Pedra" ou pierre de l'Argentine.**—*Jl. Méd. de Bordeaux.* 1925. Jan. 10. Vol. 102. No. 1. pp. 7–12. With 14 figs.

Interesting report, concerning a man aged 22 years, in whom the hair of the scalp in places presented small black hard nodular concretions, as many as 16 being counted over a length of 5 cm. on one hair. Most numerously distributed towards the free end of the hair and never less than 1 cm. distant from its root, the nodules, 0·5-1·5 mm. in diameter and 2 mm. length, either encircled the hair or were laterally disposed. There was no apparent alteration in tractability or friability of the affected hairs. Microscopical examination showed the concretions to consist of a conglomeration of rounded spores, each surrounded by a resistant membrane of double contour with protoplasm containing a nucleus and nucleolus. The cultural and microscopical appearances are described in detail, and the fungus recognized as of the order *Ascomycetes*, species *saccharomyces*. Treatment of the condition, which is readily cured, consists in frequent washings of the scalp and the application of 1-2 per cent. sublimate solution.

W. J. O.

Mitchell (J. A.) & Robertson (G. W.). **"Witkop" or "Dikwakwadi" in Bechuanaland Natives. Report of Investigation.**—*Med. Jl. S. Africa.* 1924. Dec. Vol. 20. No. 5. pp. 122–125. With 4 figs.

This article originally appeared in the *South African Medical Record* of Feb. 15, 1915, and is now reprinted in view of the assertions made by Drs. D. C. Macarthur and E. N. Thornton that "witkop" is a manifestation of hereditary syphilis, published in two papers on syphilis among natives of Bechuanaland, which were reviewed in this *Bulletin* in 1924 (Vol. 21, p. 399). The reviewer therein pointed out the very doubtful evidence adduced in favour of this hypothesis, and the present writers' investigations go to prove that "witkop" is definitely the result of an infection with the fungus of favus; whether an already existing syphilitic infection plays any part as a predisposing cause remains uncertain.

The investigations were carried out upon four typical cases of "witkop" which were taken from the Taungs district of Bechuanaland to the Somerset Hospital, Capetown. A clinical description of the disease is given, together with microscopic and cultural findings. Three of the four cases gave positive Wassermann reactions, the fourth was negative, but none showed any clinical manifestation of syphilis. Treatment by internal administration had no effect on the scalp condition, and full doses of salvarsan were equally without result, but all cases, even the worst, cleared up in 2 or 3 weeks under local treatment with dilute nitrate of mercury ointment. To prevent relapse it was found necessary to prolong the treatment for 2-3 months.

H. S. Stannus.

Baerts (F.). *Discomyces congolensis.*—**Agent étiologique d'une actinomycose nouvelle occasionnant des lésions attribuées jusqu'à présent à la syphilis, au pian ou au phagédenisme.**—*Bull. Méd. du Katanga.* 1925. Apr. Vol. 2. No. 2. pp. 67–75.

The affection may occur on any part of the body, save the scalp, palms and soles, commencing as a small subcutaneous or submucous

nodule which becomes adherent to the skin. The lesion then softens and on aspiration yields a clear viscous fluid, occasionally purulent, in which the mycelial filaments may be demonstrated. Left alone such lesions will rupture spontaneously to form characteristic ulcers with irregular borders. Secondary contamination with staphylococci, streptococci and fusospirillary organisms may follow and the suppuration involve tendons, muscles, joints and even bones. Men become impotent, women sterile, and children crippled. Such advanced cases present the mutilated appearances described by VAN NITSEN, destruction about the nasopharynx leading to the condition of "gangosa," while another characteristic lesion is that of polydactylitis. The pus shows actinomyces granules, gelatinous, semi-transparent, in colour whitish, yellowish or greyish, more or less globular-shaped in the smaller forms and oval when reaching 3-5 mm. diameter, containing colonies of mycelium. The microscopical appearances of the mycelium and clubs are described in detail. For staining purposes gentian violet and Pappenheim's stain are recommended. The cultural characteristics have not been determined. While the fungus is specific in being found in all the fluctuating lesions of the affection described, it may also occur as a complicating factor in the lesions of syphilis, yaws and tropical sore: it has not been demonstrated in the closed bony lesions. No specific treatment has been found; the improvement observed under and only during the course of neosalvarsan administration may be due to the beneficial effect of the drug on the general condition as occurs under any form of arsenic treatment. Locally antiseptic applications, especially iodoform, should be employed wherever possible. An interesting table is given to show the various native names for the disease in the different areas of Belgian Congo.*

W. J. O.

LOVEJOY (Edward D.) & HAMMACK (R. W.). **Mycetoma. Report of Four Cases.**—*Arch. Dermat. & Syph.* 1925. Jan. Vol. 11. No. 1. pp. 71–79. With 4 figs. [10 refs.]

Four cases, all occurring in Mexicans, are reported from Los Angeles. Two of the patients gave a history of having worked barefooted about the time of onset of the affection, while the remaining two described traumatic occurrences. The actinomycotic fungi were not identified except in the second case reported, from whose lesions a streptothrix was obtained in culture for which the name *Actinomyces mexicana* is suggested. "While mycetoma has been found in various parts of the United States, it is more common in the south west."

W. J. O.

ANDERSON (Ch.). **Sur quatre nouvelles observations tunisiennes de mycétome.**—*Arch. Inst. Pasteur de Tunis.* 1925. Jan. Vol. 14. No. 1. pp. 90–92. [4 refs.]

Four new cases are reported, one due to *Scedosporium apiospermum*, the cultural characteristics of which are described, the remaining three cases to *Discomyces*. This report brings the number of observations reported to date from Tunis to a total of 16.

W. J. O.

* Reference is made to VAN NITSEN's paper on the tertiary manifestations of yaws [this *Bulletin*, Vol. 18, p. 251]. Many of the symptoms there described Baerts would attribute to the Discomyces.

Putzu (F.). [**Mycetoma of the Foot in Europe.**]—*Arch. Ital. di Chir.* 1924. Nov. p. 585. [Summarized in *Brit. Med. Jl.* 1925. Mar. 28. (Epitome of Current Medical Literature.) p. 58.]

Case report, the first from Sardinia, of a boy aged 16 in whom the disease had commenced at the age of 9 years without any apparent cause on the sole of the foot to increase rapidly in extent during the last two years as the result of an injury. Cultures of the blood-stained pus with yellowish granules, from the numerous pustules on the swollen foot, showed an organism identical morphologically and experimentally with actinomyces. Amputation of the foot was performed.

W. J. O.

da Fonseca (O.). **Sur l'étiologie du *chimbéré*, nouveau type de dermatose endémique des Indiens du fleuve S. Miguel.** *Endodermophyton roquettei*, **n.sp.**—*C.R. Soc. Biol.* 1925. Feb. 6. Vol. 92. No. 4. pp. 305–306.

Brief report of a case of dermatomycosis in an Indian showing confluent circinate scaly patches on the face, neck and anterior part of the thorax. All the lesions were remarkably achromic, with the scales readily detached. Microscopical examination revealed a segmented mycelium in the scales. Cultures were obtained and the fungus recognized as an endodermophyton to which the name *E. roquettei* was given. Somewhat resembling tinea imbricata the lesions showed nothing of the concentric pattern characteristic of that affection. The patient stated that some 50 persons of his tribe were suffering from this apparently endemic infection known among themselves as *chimbéré*.

W. J. O.

da Fonseca (O.). **Sobre a etiologia do "chimberê," dermatose endemica dos indios do rio São Miguel.**—*Sciencia Medica.* 1924. Nov. 30. Vol. 2. No. 11. pp. 615–617. With 2 plates.

The cutaneous condition here described attacks a considerable number of the Indians of the district. The lesions consist of large confluent circinate patches, scaly and itching. The exfoliated segments vary in size from less than a millimetre to half a centimetre. In the patient whose case is described the front of the scalp, the face, throat and anterior part of the thorax were involved. Microscopically, there is seen to be a mycelium with pigmented granulations, varying in colour from a dark chestnut to a light yellow. The condition most nearly resembling it is "tokelau" of Asia, or Tinea imbricata, but it does not present the concentric disposition of the latter. It is quite different from Pinta. Further study is to be undertaken to determine more accurately the nature of the fungus.

H. Harold Scott.

Adcock (E. W.). **A Case of Cutaneous Blastomycosis.**—*Nigeria Ann. Med. & San. Rep. for the Year 1923.* Appendix IV. p. 36.

Case report concerning an European official with an eczematous eruption, of two years' duration, on the left palm and interdigital clefts, showing small deep epidermal blisters in the fluid of which were observed small yeast-like cells. Local treatment was unsuccessful, while improvement was obtained with intravenous injections of tartar emetic.

W. J. O.

James (J. F.). **A Note on the Treatment of Tropical Ulcer.**—*Indian Med. Gaz.* 1925. June. Vol. 60. No. 6. p. 274.

Brief note in support of the success obtained through the employment of moist compresses of 25 per cent. solution magnesium sulphate applied locally to the sores until healing was complete. Hot permanganate baths may be usefully added in very foul sloughing cases.

W. J. O.

Kervrann. **Traitement de l'ulcère tropical par l'émétique.**—*Ann. de Méd. et de Pharm. Colon.* 1925. Jan.–Feb.–Mar.–Apr. Vol 23. No. 1. pp. 128–130.

Treatment by the intravenous injection of 1 per cent. tartar emetic solution, commencing with 3 cc., and increasing to 5 cc., is recommended. The notes of 13 cases are briefly recorded with healing obtained after the administration of 22-27 centigrammes emetic over periods varying from 16 to 33 days. Mention is made of the beneficial action of 3 per cent. methylene blue applied locally to the lesions.

W. J. O.

Rebêlo (Frederico) & d'Almeida (Carlos). **Essais de traitement des ulcères fuso-spirillaires de l'Angola.**—*Revista Méd. de Angola.* (No. especial 1e Congresso de Med. Trop. da Africa Ocidental. Vol. 3. 3a., 4a e 5a Sessões.) 1923. Aug. No. 4. pp. 57–66.

This paper consists of very brief abstracts of cases of fuso-spirillar ulcers treated in various ways. For killing the microbes speedily the authors recommend, as the result of their observations: (*a*) intravenous injections of neosalvarsan; (*b*) local applications of trepol; and (*c*) lavage with Dakin's solution followed by local applications of 0·2 per cent. gomenol. (Local application of neosalvarsan merely aggravates the ulceration.) For maintaining a clean aseptic surface favourable to granulation, after the subjugation of the microbes, they recommend: (*a*) local applications of trepol; (*b*) injections of novarsenobenzol; and (*c*) local applications of gomenol solution.

A. Alcock.

Thierfelder (M. U.) & Thierfelder-Thillot (M.). **Studien ueber das venerische Granulom. (Vorläufige Mitteilung.)**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1924. July. Vol. 28. No. 6. pp. 221–235. With 3 figs. [8 refs.]

This paper is based on observations made on over 1,000 cases seen between January and August while travelling through New Guinea. Bacteriological findings are dealt with, including descriptions of the specific cocco-bacillus, and its morphological and cultural characteristics, with a note as to associated organisms.

The authors, then, in dealing with the clinical manifestations of the disease, distinguish four stages: (1) Primary affection; (2) local spread; (3) extension by lymphatics to glands and internal organs, with death from intercurrent disease such as pneumonia or peritonitis from suppuration of mesenteric glands; (4) involvement of the nervous system. The belief in the spread to internal organs is based apparently upon the cultivation of the organism once from a liver

abscess and once from a mastoid abscess among the 1,028 cases. More often they state that nasal and joint cartilages are attacked, producing conditions resembling lupus and arthritis deformans respectively. The statement in regard to involvement of the nervous system depends upon the fact that three cases among 1,028 were observed with an ascending flaccid paralysis terminating in death. [The evidence in favour of stages (3) and (4) must, therefore, be regarded as meagre and rather unconvincing, especially in regard to (4), as 2 out of the 3 cases had previously been under antisyphilitic treatment.] The differential diagnosis given is of little importance. The treatment adopted consisted of intravenous injections of tartar emetic, commencing with 5 cc. of 1 per cent. solution increasing in daily doses till 2 gm. were given in 50 days. The authors state that " the drug must act directly on them " (the organisms), as they are no longer seen after a few days, and mention that in spite of " complete cure " relapses were not infrequent.

H. S. Stannus.

Fraser (A. Reith). **Granuloma Inguinale : including a Series of Cases illustrating some Points in Prognosis and Treatment.**—*Brit. Jl. Dermat. & Syph.* 1925. Jan. Vol. 37. No. 1. (No. 435.) pp. 14–29. With 3 figs. [32 refs.] also in *Jl. of Urology.* 1925. Feb. Vol. 13. No. 2. pp. 227–246. [32 refs.]

Attention is drawn to the great prevalence of this condition among the coloured races in South Africa, and a comprehensive general account of the disease is given. Those cases in which the initial lesion is on the penis appear to show less extensive spread than where the affection commences on the pubis or genito-urinal folds. Special note is made of the absence of superficial secondary bacterial contamination of the lesions. The etiology has not been definitely determined. Complete spontaneous healing does not occur. Eighteen cases are briefly reported, of which 16 were treated with tartar emetic to give only 6 beneficial results, while one case, with a negative Wassermann reaction, healed completely after sulfarsenol administration.

W. J. O.

McRae (John Collier). **Granuloma Inguinale and Syphilis. Report of a Case exhibiting Both Infections.**—*Jl. Amer. Med. Assoc.* 1925. Feb. 14. Vol. 84. No. 7. p. 512. With 1 fig. [1 ref.]

Case report of double infection in a white man. The lesion had been noticed on the penis, about the coronal sulcus on the 8th day following coitus. Treated primarily as a chancroid lesion and later with nine arsphenamin injections there was no improvement of the local sore, which had gradually increased in size. Dark ground examination was negative, as also the blood Wassermann reaction. After five antimony and potassium tartrate injections the ulcer was healing when a macular syphilitic rash and sore throat developed with a positive Wassermann reaction. The antimony injections were discontinued and antisyphilitic medication recommenced. While the syphilitic lesions then improved, the penile sore relapsed to heal completely under further injections of antimony. The diagnosis

of granuloma inguinale depended upon the non-reaction of the sore to antisyphilitic remedies and to its healing under antimony, with relapse when this specific was temporarily discontinued.

W. J. O.

Johns (Foster M.). **Some Observations on Granuloma inguinale and Cultural Studies of the Donovan Bodies.**—*Proc. Internat. Conference on Health Problems in Trop. America.* 1924. pp. 440–451. With 5 plates. [8 refs.] [United Fruit Company, Boston, Mass.]

Attention is drawn to cases in which the lesions had been situated in areas other than the usual inguinal region, including the gums and roof of the mouth. The appearance of the Donovan bodies is described and this organism is considered to be a protozoan parasite and not a simple encapsulated bacillus. The phagocytosis and intracellular multiplication of the organism in the endothelial cells constituting the walls of blood vessels is emphasized. Relapse of the disease, after apparent healing of the lesion, may depend upon an occasional infected endothelial cell, lying in the epithelium of the hypertrophied papillae, not being reached by the specific medicament. Interrupted rather than continuous treatment is recommended to prevent the cumulative action of the drug. All experimental attempts to cultivate the Donovan bodies were negative.

W. J. O.

Adams (Walter Booth). **Rat-Bite Dermatitis, with a Report of a Case.**—*Arch. Dermat. & Syph.* 1925. May. Vol. 11. No. 5. pp. 654–657. [3 refs.]

Case report concerning a woman with a blotchy erythematous rash on the arms, chest and face, with fewer lesions on the back and abdomen, following a rat-bite on the right hand inflicted some four weeks previously. The original bite lesion had healed to break down in about 16 days to form "a painful ulcer with elevated edges and some sclerosis." The axillary glands on the affected side alone showed enlargement. The condition entirely cleared after two injections of arsphenamin. The sclerosed ulceration is likened to the primary syphilitic chancre and the eruption to the syphilitic roseola. The Fontana-Trebaudeau stain is recommended for the identification of the *S. morsus muris*, which, however, was not isolated in this case, the first to be reported from Syria.

W. J. O.

Kennedy (J. C.). **Acarodermatitis Urticarioides (Grain Itch) in Turkey.**—*Jl. Roy. Army Med. Corps.* 1924. July. Vol. 43. No. 1. pp. 45–47.

The dermatitis caused by certain grain-mites is here well exemplified: the history of intimate contact with straw or grain, the eruption, prevalent on the trunk, commonly vesiculous or pustulous, and, with the concurrent rise of temperature (100° to 102° F.), suggestive of some exanthematous fever, the intolerable itching and restlessness distractive of sleep. The cases here well recorded were reported as chickenpox, and were diagnosed clinically as dermatitis due to *Pediculoides ventricosus*, but the single specimen discovered was identified as a sugar-mite (*Glycyphagus* sp.); they recovered without any special antiparasite treatment.

A. Alcock.

Thompson (A. G. G.). **Barley Itch.** [Memoranda.]—*Brit. Med. Jl.* 1925. Jan. 10. p. 71.

Description of the irritating rash, "barley itch," "miller's itch," of which several outbreaks occurred towards the end of last year at ports in the South of England where cargoes of barley from Morocco were being unloaded. The mite causing the rash seems not to have been identified precisely.

A. A.

Lapin (M. O.). **Ein zweiter Fall von Creeping Disease.**—*Dermat. Woch.* 1924. Dec. 27. Vol. 79. No. 52. pp. 1654–1660. With 4 figs.

A long and inconclusive account of the extensive meanderings of a "larva migrans" in the skin of a little girl in the second year of her age. The presence of the larva was first noticed on the buttock, and in the course of six months' observation it wandered, with many circuitous doublings and turnings and crossings of track, over extensive areas of the abdomen, back, and breast. Attempts to stop its advance by external applications and galvanocautery and attempts at excision were equally unsuccessful, and the observation was terminated, incomplete, by the abrupt departure of the child and its mother. The author thinks [but with no good reason] that the larva may have been a Gastrophilus.

A. A.

Lapin (M. O.). **Zur Parasitologie der "Creeping Disease."**—*Dermat. Woch.* 1924. Vol. 78. pp. 573–584; 611-616; 638–643. With 15 text figs. [26 refs.]

This is a voluminous monograph, beginning with the first case of Creeping Disease described in 1874 by Lee. It does not add anything to our knowledge of the parasites implicated—conjectural larvae of Gastrophilus and Hypoderma—or contain anything of general interest that is not already known.

A. A.

Broden (A.) & Bernard (R.). **Considérations sur les nodosités juxta-articulaires. A propos d'un cas asymétrique observé chez un Européen.**—*Bruxelles-Méd.* 1925. July 5. Vol. 5. No. 36. pp. 1144–1150. With 1 text fig. & 1 map. [7 refs.]

After referring to the definition given by Jeanselme the authors mention the name suggested by Brumpt as more appropriate—*nodosités des saillies osseuses*. The nodes are usually symmetrical, but not invariably so; they occur on the following sites in order of frequence—trochanter, external malleolus, anterior tibial tuberosity, head of fibula, dorsal aspects of the digits, acromion, sacro-coccyx, ribs. Evolution is slow, running into years and subsequent changes—fibrous transformation, spontaneous absorption, suppuration—may take place. Common among certain tribes, the condition is rare among Europeans, the case now described, in a Belgian aged 32 who had lived in the Congo nine years, being only the tenth case found in the literature.

The history in this case was unimportant and entirely negative in respect of syphilis and yaws. The swellings appeared 4 years ago, and the patient had subsequently married and his wife borne healthy children.

There was no suspicion of syphilis or yaws, but the Wassermann reaction was strongly positive. The nodes had all presented about the left olecranon process, all had suppurated and evacuated their contents, leaving thin depigmented scars, the remaining node was typical and surrounded by an inflamed zone. A preliminary injection of 0·06 gm. sulpharsenol was followed six days later by improvement in the zone of erythema. Three more injections of 0·12 gm. then given when W.R. was still positive. Treatment with increasing doses of sulpharsenol and bismuth was then carried out between the end of October and the beginning of January, when the B-G reaction was negative and the node had practically disappeared, leaving some subcutaneous induration.

The nine other European cases referred to are: GIBLIN (1915); DE BRAULT (1916): DE GOUGEROT-BURNIER-BONNIN (1920); POUPELAIN (1920): REIMLINGER (1923): BROUARD (1923); MORIN (1924); all of whom had been in the tropics, and DE QUERVAIN (1920) and GOUGEROT (1924) cases that had not been in the tropics.

The authors point out how often among these cases in spite of a positive blood reaction there has been no history or clinical evidence of syphilis. The cases among natives tend to occur according to JEANSELME in the following groups: (1) Indo-China, Java, New Guinea and the Hawaian Islands; (2) West and Equatorial Africa; (3) North Africa; (4) Madagascar, Mauritius and the Comoro Islands; (5) Brazil—all lying between 30° N. and 30° S.

Reference is made to the belief held by various observers as to the etiology of the condition—for the authors neither syphilis nor yaws is the only cause, but they incline to the belief that either may be an etiological factor.

H. S. Stannus.

NOEL (P.). **Un cas de nodosités juxta-articulaires chez une Européenne.**—*Ann. de Dermat. et de Syph.* 1925. Mar. 6th Ser. Vol. 6. pp. 205–207. [2 refs.]

Case report concerning an European woman, aged 45, with a hard multi-lobulated tumour about the right olecranon region. A similar lesion, dating from 5 years, and previous to her arrival in India, had been excised from the left elbow. She had previously lived for some time in North Africa with a former husband. There were no definite signs or history of syphilis. After four injections badly borne of novarsenobenzol the lesion diminished very considerably. The history of her former living in North Africa is of pathogenetic interest, as the writer had not observed other cases of this condition in South India (Pondicherry).

W. J. O.

ONORATO (Raffaele). **Le nodosità juxta-articolari in Tripolitania.**—*Arch. Ital. Sci. Med. Colon.* Tripoli. 1924. Apr.–May–June & July–Aug.–Sept. Vol. 5. Nos. 4–5–6 & 7–8–9. pp. 65–80; 97–112. [27 refs.]

The nature of juxta-articular nodules is discussed with considerable fulness. The author gives detailed descriptions of 9 cases observed by him. In 5 of these the Wassermann reaction was definitely positive; in a sixth it was doubtful the first time, but weakly positive 7 days later. Of the 3 giving a negative reaction 2 showed signs and gave a history of a former attack of yaws. The evidence, he suggests,

points strongly to their syphilitic origin, and this is further supported by the fact that (though excision is the only certain treatment) antisyphilitic measures lead to a diminution, sometimes a very marked diminution, of these swellings.

H. Harold Scott.

Jamin (H.). **Trois cas de nodosités juxta-articulaires.**—*Arch. Inst. Pasteur de Tunis.* 1925. Jan. Vol. 14. No. 1. pp. 130–135. With 1 plate.

The three cases here reported concerned natives, each of whom gave a positive blood Wassermann reaction, and one showed at the same time a late circinate syphilide. A short general account of the nodules in question is appended, and it is pointed out that all observers are in agreement upon the histological features of the lesions, while five possible etiological factors have been suggested. These observations are the first to be recorded from Tunis.

W. J. O.

Pinto (Cesar). **Nodulos de Lutz.**—*Sciencia Medica.* 1924. Dec. 31. Vol. 2. No. 12. pp. 734–745. With 2 plates. [32 refs.]

Nodules of Lutz or juxta-articular nodules are defined as being symmetrical, of slow growth and painless on pressure. The author has collected brief records of 12 cases by others, and has added one of his own. Five of the patients were women and eight were men. In some of them the Wassermann reaction was definitely positive, and some showed clear signs of syphilis; treatment by mercury, by arsenic (as 914) or by Sulby's colloidal bismuth rapidly effects a cure, and the author concludes that the condition is, doubtless, syphilitic in nature.

H. Harold Scott.

Facio (A. A.). **A Review of Ainhum, with Radiographic Demonstration of its Bone Pathology.**—*Proc. Internat. Conference on Health Problems in Trop. America.* 1924. pp. 533–544. With 8 figs. [United Fruit Company, Boston, Mass.]

The histological and radiographic appearances of one case are recounted and illustrated to form a short commentary on the etiology of the disease. Such features were not consistent with any trophic disorder, while the bony changes were not unlike those occurring in leprosy. Constant mechanical irritation of the bare foot, setting up a chronic inflammatory process with marked arterial sclerosis, is considered to be the main causal factor. Amputation of the affected toe should be performed as soon as the diagnosis is made.

W. J. O.

Acton (Hugh W.). **Giant Urticaria.**—*Indian Med. Gaz.* 1925. May. Vol. 60. No. 5. pp. 197–201. [9 refs.]

The condition consists in an urticaria produced under the deep fascia in contradistinction to the oedema of the superficial skin layers occurring in ordinary urticaria. Attention is drawn to the peculiar age incidence of the disease, which seems to affect chiefly young children

from 15 months to 2½ years of age, and adults of 30–45 years. The intestinal flora should be investigated in cases showing general sensitiveness, as such organisms may cause a reduction of the amino acids of protein digestion to form toxic bases. Three of the writer's series of 40 cases were *Entamoeba histolytica* carriers. Dermal tests are invaluable for the recognition of the particular protein to which the patient is hypersensitive. This peculiar susceptibility of 20 cases is presented in tabular form. The differential diagnosis of the disease is compared with tenosynovitis, filarial lymphangitis and chronic erysipelas. For specific treatment is recommended sol. adrenalin hydrochloride (1 in 1,000) m2 to be given intramuscularly daily for 4-5 days, followed by suprarenalin gr. i and ext. thyroideum siccum gr. ¼ bis die on empty stomach for 3 weeks.

W. J. O.

Butler (C. S.), Houghton (J. E.) & Cooper (G. F.). **Mycosis of the Hands and Feet.**—*Proc. Internat. Conference on Health Problems in Trop. America.* 1924. pp. 500–523. With 5 plates (1 coloured). [16 refs.] [United Fruit Company, Boston, Mass.]

Curjel (Dagmar F.) & Acton (Hugh W.). **Jute Dermatitis.**—*Jl. Assoc. Med. Women in India.* 1925. Feb. Vol. 13. No. 1. pp. 16–19.

MALARIA.

Southern Medical Journal. 1925. June. Vol. 18. No. 6. pp. 432–482. With 3 text figs. [17 refs.]—**Symposium on Malaria.** [Ferrell; Walch; Hegner; Darling; King; Maxcy, Smillie & Plecker; Le Prince; Welch; Fricks; Rankin; Bair; Fort; Dowling; Underwood; Enloe; Hayne; Crittenden; Duggan; Williams; Lenert; Rawlings.]

Details of malaria control in 13 of the United States are described. For the rest, consideration will be limited to the papers of Darling. The extent to which this will cover the ground debated is strikingly significant.

In "Medical Research in Malaria," undertaken at Leesburg, Georgia, the spleen rate, particularly those lesser degrees of enlargement which he deemed so important for the United States (this *Bulletin*, Vol. 22, p. 342), is shown to be a better indication of the degree of local infection than the parasite rate. The treatment of blackwater fever initiated by Dr. O. L. Cranford (the subcutaneous administration of 20 cc. of antistreptococcic serum) has given a very low death rate.

"Entomological Research in Malaria" emphasizes that borrowpits are not necessarily malarially dangerous, that *A. quadrimaculatus*, the malaria transmitter of the Southern States, has a culex-like attitude, and that this, as well as *A. crucians* and *A. punctipennis*, have their definite preferences for the degree of stillness, pH, and plankton content of water. Precipitin tests showed that the blood, contained in mosquitoes' stomachs, was from various animals as follows. Of 236 *A. crucians*: cow 157, pig 33, horse 30, dog 11, chicken 2, man 3. Of 272 *A. quadrimaculatus*: cow 130, man 88, pig 41, horse 7, dog 4, chicken 2. Of *A. punctipennis* none contained human blood. In screened houses 150 female mosquitoes tried to enter by the chimney in two days, all unfed virgins. Of 2,179 female anopheles dissected (*A. quadrimaculatus* 1,471, *A. crucians* 571, *A. punctipennis* 77) 60 were infected, all of the first species.

In discussion Barber pointed out that *A. crucians* will bite man, and cannot be exonerated as a possible malaria carrier.

An important paper is that by Hegner indicating the enormous lacunae which are known to exist in our knowledge of malaria.

Clayton Lane.

Moreau (G.). **Epidémie de paludisme sur un navire.**—*Bull. Soc. Path. Exot.* 1925. Feb. 11. Vol. 18. No. 2. pp. 218–221.

A mysterious epidemic attacking 16 of 24 members of the ship's crew and stopping her course at sea proved to be malaria contracted at Kaolack, Senegal, with its splenic index of 100 in children under 5. Two deaths occurring were from other causes. Of five who used mosquito nets, four escaped.

C. L.

Boeckh (R.). **Beitrag zur Epidemiologie und Klinik der Malaria tropica.**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. July 1. Vol. 29. No. 7. pp. 305–316.

Writing of an epidemic at Hoijün in the province of Kwangtung, China, Boeckh concludes that malarial virulence is heightened by

man's lessened resistance, and, apparently, that immunity acquired to tertian malaria does not affect subtertian infection. Regarding syphilis he notes that while he has seen no local tabes or general paralysis, he has no evidence that malaria influences syphilitic manifestations.

C. L.

RODENWALDT (Ernst) & ESSED (W. F. R.). **Investigation into the Malaria at Tandjong Priok.**—*Meded. Dienst d. Volksgezondheid in Nederl.-Indië.* 1925. Pt. 2. pp. 89–121. With 19 charts & 1 folding plan.

SWELLENGREBEL's conclusion, that *A. ludlowi* is the essential local malaria transmitter, is confirmed. Its condition of breeding is plenty of decaying matter in the water, even strong pollution with urine and faeces being acceptable. Granted this, it will breed in water from that which is fresh to that having 3 per cent. of salt, the optimum in fishponds being about 1·5 per cent. The sprinkling of its breeding places every 5 days with oil residue absolutely prevented breeding, and the rapid concomitant disappearance of imagines suggested that the species is short-lived. *A. rossi* (Giles) probably plays a minor part as transmitter. The parasite rate has fallen under prophylactic measures. Nevertheless, *P. vivax* persists in many carriers throughout the year, while the subtertian parasite does not. The spleen index has not decreased, but spleens are considerably smaller. The haemoglobin index has risen.

C. L.

STEPHENS (J. W. W.). **Ceylon : Parasite and Spleen Rates. Parasite Ratios.** [Miscellanea.]—*Ann. Trop. Med. & Parasit.* 1925. Mar. 31. Vol. 19. No. 1. pp. 137.

Average, maximum and minimum spleen rate figures furnished by CARTER for nine Provinces were, for 56,372 children, 14, 16 and 1 ; the similar parasite rates among 4,647 children were 13, 29, and 2. The percentage parasite ratio on 1,206 children were for subtertian, tertian and quartan parasites, 11, 61, 28. The season and method of examination are unnoted.

C. L.

PALESTINE. **Proceedings of the Eleventh Meeting of the Antimalarial Advisory Commission, May 19th, 1925.** [HERON (W. G.), Director of Health, President.] [MS. received from the Dept. of Health, Jerusalem.]

Members of the Malaria Commission of the League of Nations addressed this meeting.

Professor B. NOCHT emphasized the need for propaganda and complete treatment of sick and carriers.

Professor D. OTTOLENGHI stressed the value of drainage works of medium size.

Col. S. P. JAMES noted that the temporary water storage system of Palestine struck at the root of all anti-malarial measures, and urged investigation of the number of broods of *A. bifurcatus* emerging each season. Since, in England, these numbered two only in the season, and

each emerged during one or two days only, a week's oiling at the time of the third instar would perhaps free an area of the species. Similarly, one or two winter oilings for a mosquito which passed the winter as a larva would presumably suffice for the year.

Professor N. H. SWELLENGREBEL, too, referred to *A. bifurcatus*. Its habits illustrated the risks of generalization, for whereas in Holland it is wild, and never enters houses, in Palestine it is urban and domestic. In practice, "species sanitation"—the local eradication of a species judged to be primarily implicated—had given disappointing results, often from unexpected breeding habits, or, as instanced by *A. hyrcanus*, by changing from apparent harmlessness to marked infectibility.

Dr. S. T. DARLING stressed the need of thorough local pre-campaign investigation, so that work could be concentrated on real breeding places. "Species sanitation," which had proved so useful in Panama, required constant check. He emphasized the need of recognizing slight degrees of splenic enlargement (*an'e*, p. 342), for where the normal organ weighed 75 grammes, the spleen just palpable on deep inspiration under the ribs weighed 90. It was only where underfeeding and hyperendemicity coincided that the largest spleens occurred.

On comment by Dr. KLIGLER, SWELLENGREBEL agreed that the constant spleen rate of Palestine as contrasted with the rapid epidemic seasonal increase in the Dutch East Indies was probably due to the preponderatingly single seasonal epidemic of subtertian malaria in the latter, and the double seasonal epidemics of tertian and subtertian in the former, remembering, too, the influence of numerous tertian relapses.

C. L.

PALESTINE. **Department of Health. Malaria Research Unit, Haifa. Annual Report, 1923.** [KLIGLER (Israel J.), Controller.]—32 pp. With 19 text figs., 9 folding maps & 5 folding charts. (Maintained by the American Joint Distribution Committee in co-operation with the Government of Palestine.)

Matters of general interest not already noted in abstracting *interim* publications are few. The average percentage decrease of malaria for all nine Demonstration Areas is 50. Drainage projects are all co-operative undertakings, part of the cost being always borne by those affected. In places, coastal marshes are being rendered malarially innocuous by conversion into evaporating basins for recovery of salt from water pumped in from the Mediterranean.

C. L.

SWELLENGREBEL (N. H.). **Een vergelijking van de statistiek der malaria-sterfte in Italië met die der sterfte aan tusschenpoozende koorts, febris intermittens en malaria in Nederland.** [A Statistical Comparison of the Malarial Deaths in Italy with Deaths from Intermittent Fever, Febris Intermittens and Malaria in Holland.]—*Nederl. Tijdschr. v. Geneesk.* 1925. July 11. 69th Year. 2nd Half. No. 2. pp. 247–257. With 11 text figs. [5 refs.]

Swellengrebel charts the general and malarial annual mortality curves for Italy, in which country the improvement observed is attributed to definite antimalarial work instituted by legislation. For Holland [where such work is recent], if, as in Italy, deaths from—

intermittent fever be taken in early years to represent malaria, charts show the same phenomenon. But analysis of the Dutch curves shows that for certain provinces, in years when figures for continuous fevers and diarrhoeas have increased, those for malaria have done likewise, suggesting that, particularly for diarrhoea, deaths have wrongly been attributed to malaria. The distribution through the country of malaria which the charts show, and that by age periods and sex, indicate that malaria was not, as has been suggested, introduced into Holland from the Indies, but is indigenous. Caution is urged in the attempt to explain epidemic changes in too simple terms.

C. L.

PAGNIER (A.) & SCHRUMPF-PIERRON (P.). **A Clinical Study on Malaria in the Near-East and in Europe.**—*Jl. Trop. Med. & Hyg.* 1925. Mar. 16. Vol. 28. No. 6. pp. 117–126. With 1 folding chart & 18 charts in text.

There is a "fundamental law that the onset of both vivax and falciparum attacks depend chiefly on the temperature of the air," the former appearing when the temperature drops to near 0° C., the latter when it rises to about 25° or 30° C., but continuing till it drops to 5° C. Gametes of *P. falciparum* circulate when the outside temperature is about 25° C. "The schizonts (sexual reproduction) always appear before the gametes and during the few days preceding the arrival of minimum temperatures of 25° C.," an observation which "seems a proof that production *begins in the tissues** at a temperature below 25° C., and that afterwards the gametes leave there and continue reproducing in the circulating blood." "Some authors . . . admit that it is possible, by strong treatment with quinine, to arrest malaria infection. . . . We find it difficult to understand on what idea this is based." "In patients who take adequate doses of quinine we frequently note the absence of schizonts from the blood. . . . We may further deduce that the patient dosed with quinine during his attacks is less infectious than he who does not take the medicine." Such unevidenced divergence from the evidenced, and therefore generally accepted, life-history of the malaria parasites is also reflected in the clinical types of fever which are assigned to the two parasites mentioned.

C. L.

BLACKLOCK (B.) & GORDON (R. M.). **Malaria Parasites in the Placental Blood.**—*Ann. Trop. Med. & Parasit.* 1925. Mar. 31. Vol. 19. No. 1. pp. 37–45. [7 refs.]

Plasmodium falciparum was found in 46 per cent. of 26 placentas of native women in Freetown, Sierra Leone, and in 17 per cent. of the peripheral bloods of 23 of them. Of 4 abnormal labours the placentas were infected in 3. In no case in life or after death was the child found infected. The effectiveness of the barrier normally interposed by the placenta is evidenced by the observation that the ratio of parasites in the placental to that in the maternal blood varied from 20 to 1 to 1,395 to 1. Merozoits varied from 10 to 33. Crescents were never seen in placental or peripheral blood. The former fulfils

* Italics in the original.

the conditions favouring culture, namely, stagnation of blood, limitation of oxygen, and presence of glucose, conditions under which crescents have never been grown. It is noted that, since the minimum known incubation period of this infection is 6 days, this period is the maximum interval between birth and detection of parasites which can be accepted as evidencing congenital malaria.

C. L.

ROUBAUD (E.). **Les raisons de l'absence en Europe septentrionale de l'endémie palustre estivo-automnale** (*Plasmodium praecox*).—*Bull. Soc. Path. Exot.* 1925. Mar. 11. Vol. 18. No. 3. pp. 279–287. [13 refs.]

The absence of subtertian malaria from Northern Europe is explained thus: SWELLENGREBEL has shown that in Holland infection with tertian malaria is probably acquired in winter. Presumably this is so also with subtertian malaria. In winter the anopheline cycle takes 50 days for *Plasmodium vivax*. For *P. falciparum* it takes longer, perhaps 3 months at 16° C., and will probably not be completed. [The need for introducing, as is done, the zoophilic factor also is not clear.]

C. L.

MÜHLENS (P.) & SFARČIĆ (A.). **Bericht ueber Malariaarbeiten in Dalmatien.**—*Cent. f. Bakt.* 1. Abt. Orig. 1925. Apr. 8. Vol. 94. No. 6. pp. 326–376. With 15 figs. on 3 plates.

In the main of local interest. The parasite index in the autumn of 1922 was 28·9, divided between subtertian, tertian, quartan and mixed infections in the percentages of 62, 14·1, 22·6 and 1·3; the corresponding figures in the period May to June being 13·9, 13·4, 52·1, 30·3 and 4·2. The splenic index during the earlier period was 53·5. Of 36 *Anopheles maculipennis* found in houses in September-October two were infected, while 18 from stables were negative. In July houses gave one infected in 72, and stables none in 50.

C. L.

DAUDY (R.). **Etude épidémiologique et prophylactique de la malaria en Albanie.**—*Bull. Soc. Path. Exot.* 1925. Apr. 8. Vol. 18. No. 4. pp. 320–327. With 2 text figs.

The Albanian capital Tirana lies in a plain, marshy in places, and intersected by a network of rivers and canals. In August-September 385 children examined showed a parasite index of 8 and a splenic index of 28. Of the 31 showing parasites *P. falciparum* was found in 25, *P. vivax* in 5, and *P. malariae* in 1. Gametes were encountered 8 times. The only adult mosquitoes captured were two *A. maculipennis*, and the only larvae those of *A. superpictus* (*palestinensis*).

C. L.

GIOSEFFI (M.). **Recrudescenza della malaria in Istria e come debellare l'infezione.**—*Policlinico.* Sez. Prat. 1925. Mar. 30. Vol. 32. No. 13. pp. 451–453.

In parts of Istria the pre-war malarial incidence was 6-9 per cent., in 1916, 26 per cent., with a recrudescence in 1924. Two-thirds of the cases were tertian, one-third subtertian. After noting various forms of recommended treatment Gioseffi advises 1·2 to 2 gms. of quinine, presumably daily, for 2 weeks, with iron, arsenic and strychnine in the intervals of quinine administration.

C. L.

ROUKHADZÉ (N.). **La parasitologie et l'épidémiologie du paludisme en Abkhasie (Géorgie).**—*Bull. Soc. Path. Exot.* 1925. Apr. 8. Vol. 18. No. 4. pp. 327–343. With 2 charts in text.

Plasmodium vivax predominated from May to August, *P. falciparum* from August to October, *P. malariae* from November to February. Conviction that primary attacks can be recognized as such leads to the belief that all primary attacks occur during the five months beginning July, and that attacks at other times are relapses—the result of parthenogenesis of macrogametes. Malarial attacks which immediately follow many mosquito bites are attributed to protein shock. The first generation of Anopheles appears at the end of April, but hibernation, which in the complete absence of animal houses takes place in habitations, is relative, and warmed mosquitoes will feed all the year round. *A. bifurcatus* can evolve completely from egg to imago in the winter, the process taking 50 to 60 days.

C. L.

ROUKHADZÉ (N.). **Le paludisme à Oudé (Géorgie). (Etude sur le paludisme en montagne.)**—*Bull. Soc. Path. Exot.* 1925. May 13. Vol. 18. No. 5. pp. 383–388. [1 ref.]

The village is situated at 1,100 metres altitude. Of males 33, and of women 17 per cent. were infected with malaria, 40 per cent. of the infected being aged between 10 and 19 years. Examinations made in August showed two-thirds of discovered infections to be with *P. falciparum*. *P. malariae* was absent. The inhabitants work in the valley at an altitude of 50 to 100 metres. Of 50 malarial cases only 8 passed the night at this low altitude. No anopheles were detected in the village, but *A. maculipennis* existed in the valley. It is concluded that it has perforce become a day feeder here. Fever and schizonts are apt to disappear without treatment.

C. L.

HOOPS (A. L.). **Notes on Malaria Research in the Lee County S. Georgia.** [Abstract.]—*Monthly Bull. of the Eastern Bureau.* League of Nations. Health Section. 1925. Apr. 20. Year 1. No. 1. p. 23.

A. quadrimaculatus prefers neutral, but will, for breeding, use acid or alkaline waters. *A. punctipennis* uses neutral or alkaline, *A. crucians* acid, waters. Flight of mosquitoes was investigated by "spraying" with carbol fuchsin and flour (2 to 1) tree holes in which they harboured. Dipping such mosquitoes into glycerine, alcohol and chloroform (3 : 3 : 1) gives a flash of red.

C. L.

ALCOCK (A. W.). **The Anopheles Mosquito in England.**—*Lancet.* 1925. July 4. pp. 34–35.

In view of the alarming prophesy that epidemic malaria impends in England unless anopheles be immediately exterminated, Alcock points out that anopheles, and malaria for that matter, are as native to this country as sparrows, that "the bill of mortality for the London area for the year 1665 included 5,257 deaths from 'fever and ague'," and that it is to improvement in general sanitary environment, with no thought of mosquito or the plasmodium, that the disappearance of malaria from England must be attributed, since 50 larvae may even now be caught with one dip of a cup in July and innumerable adults in a stable in October within a few hours of London. The improvement is mainly attributable to "two outstanding items of

sanitary improvement that most seem to have worked together . . . namely drainage and generally improved housing." Note this comment on the zoophil suggestion, in England. "There is no general concord of evidence that the insect prefers the blood of cattle to that of horses, or pigs, or rabbits, or man, though there would perhaps be more general agreement that it prefers a cattleshed or a stable, even when empty, to a well constructed house, even when it is inhabited.

C. L.

SWELLENGREBEL (N. H.) & HONIG (P. J. J.). **Bijdrage tot de geschiedenis der malaria in Nederland.** [Contribution to the History of Malaria in the Netherlands.]—*Nederl. Tijdschr. v. Geneesk.* 1925. June 6. 69th Year. 1st Half. No. 23. pp. 2538–2555. [62 refs.]

One of the authors has been asked why malaria has disappeared (or dwindled into insignificance) in the Netherlands, of which THYSSEN could write in 1824: "If we exclude Italy there is perhaps not a country where intermittent fevers are so malignant." The answer entailed inquiry into the historical material available. The present publication deals only with some aspects of the more interesting and well-known epidemics, viz., the Walcheren epidemic of 1809 among the British expeditionary force and the Groningen epidemic of 1826 (a part of the widespread pandemic of that year).

The writers conclude that such epidemics, the "swamp-fevers" of contemporary authors, all had some common etiological factors of which marshy soil was not always the most important. Such factors were: Overcrowding, as by introduction of labourers to carry out land reclamation, or of soldiers during war; insufficient or absent medical assistance, hospital accommodation, water supply and scavenging; and unsatisfactory nutrition of the population. These "swamp-fevers" were, indeed, a complex of diseases, among which it is sometimes possible to trace, besides malarias, paratyphoid (perhaps also typhoid), dysentery, pulmonary affections, perhaps influenza, and typhus fever, sometimes even relapsing fever.

Nothing remains of this complex but a few cases of a benign tertian malaria (occasionally increasing to distinct epidemics) equally harmless now as in former years. This disappearance is almost entirely due to general sanitary and social improvement including such measures as check intestinal and vermin-borne disease. The only traceable anti-malarial measures are the improvement of rural medical assistance, and cheaper and therefore more widely used quinine. Possibly, too, improved hygiene has helped to lessen the severity of malarial attacks, and better housing has decreased the chances of infection within human habitations.

N. H. Swellengrebel.

RUDOLF (G. de M.). **The Incubation Period of Benign Tertian Malaria.** —*Ann. Trop. Med. & Parasit.* 1925. July 16. Vol. 19. No. 2. pp. 219–233. With 6 charts. [22 refs.]

The incubation period of naturally acquired malaria is generally given as 6 to 21 days. In 37 cases in the literature following deliberate anopheline infection 7 to 30 days elapsed before the first appearance of parasites and 7 to 25 days before that of fever. In

50 general paralytics subcutaneously injected with *P. vivax* the temperature within the first 21 days overstepped 101° F. in 90 per cent., and 103° in 84 per cent. After subcutaneous injection there was found marked correlation between the first rise over 101° and KORTEWEG's chart showing the first finding of parasites in thick films; and a correlation too between the first rise of over 103° and the first findings in thin films.

The incubation period after intravenous injection was, in 60 cases collected from the literature, 1 to 19 days, and after 29 intramuscular injections at Bexley and Winwick Mental Hospitals, 6 to 23 days.

That the incubation period, judged by the first detection of parasites, tends to vary inversely with the dose is shown by the results of inoculating different quantities of the same properly suspended blood, equal quantities giving almost identical incubation periods. The intervals between injection and first fever were not so exactly correlated.

C. L.

INGRAM-JOHNSON (R. E.). **Dengue** *v.* **Malaria.**—*Jl. Trop. Med. & Hyg.* 1925. Mar. 16. Vol. 28. No. 6. pp. 126–128.

Returning to this theme (this *Bulletin*, Vol. 19, p. 579 (JOHNSON), and Vol. 20, p. 299) the writer records these further notes. In the search for undoubted clinical dengue he migrated from Colombo to Rangoon, and thence to the F.M.S. He there obtained blood from such a case, the serum from which was certified as sterile at the Institute of Medical Research at Kuala Lumpur. Of this he injected 1 cc. into each of 4 malarias, the diagnosis being evidently microscopic, but the kind of parasite unspecified. Quinine was entirely withheld. In three cases recovery was deemed complete, in the fourth a second injection was first required. Two controls received the same injection and were among the very few of the two or three hundred coolies who did not report with malaria. In two more cases, one the European Manager, similar treatment cut out, over an observation period of 5 months, microscopically established malaria which had previously appeared monthly. In 3 boys diminution of the enlarged spleen, to a degree held unique, followed a series of three serum injections. The effect on acute malaria was not tested.

The suggested explanations—that dengue is a modification of malaria brought about by a degeneration of the malarial parasite after its ingestion by the dengue-carrying mosquitoes, and that dengue serum is a natural vaccine against malaria—clearly constitute a quite separate question.

C. L.

SEGUIN. **Prophylaxie et traitement du paludisme. L'enseignement d'un séjour au Soudan.**—*Ann. de Méd. et de Pharm. Colon.* 1924. Sept.–Oct.–Nov.–Dec. Vol. 22. No. 3. pp. 365–377.

Seguin restates his malarial belief—that gametes do not appear for 10 (usually not for 20 or 30) days after infection; that they can produce schizont parthenogenetically; that if, before they form, treatment be instituted in dosage of 5 cgm. per kgm. per day (say 50 grains for a man) for 3 days, and 3·75 cgm. for 7 days the infection is certainly destroyed. If gametes have formed, the duration of treatment must be 30 to 60 days. The duration is determined in

either case by the presence or absence of parasites in the peripheral blood, they, it is held, being inevitably detected by examination of a thick film on each of two consecutive days.

C. L.

Cignozzi (Oreste). **Malaria e litiasi biliare. Deduzioni anatomo-clinico-statistiche.**—*Riforma Med.* 1925. July 13. Vol. 41. No. 28. pp. 652–655.

A connexion between malaria and gallstones is held evidenced by the finding of an enlarged spleen in 50 per cent., and a history of recent fever in 30 per cent. of the latter cases. Epidemic malaria in 1924 was followed by more numerous operations for cholelithiasis in 1925 than had ever before been noted.

C. L.

Grassi (Battista). **Se i reperti di semilune siano sufficienti per spiegare l'epidemiologia delle febbri estivo-autunnali.** [The Finding of Crescents and the Epidemiology of Aestivo-Autumnal Fever.]—*Rend. R. Accad. Naz. Lincei.* Rome. Classe sci. fisiche, matemat. e naturali. 1923. June 17. Vol. 32. No. 12. pp. 583–587. [1 ref.]

As, indeed, the nomenclature testifies, a thousand reasons had convinced Grassi that at least three species of malaria parasites exist. Study of the subtertian malaria epidemic in the Roman Campagna altered his opinion, and that for the following reasons :—

At the time when new subtertian infections begin, tertian gametes are common, while crescents are entirely absent or very rare. Subtertian fever rapidly increases in prevalence, while crescents continue very scarce, and only gradually become sufficiently abundant. Various hypotheses were weighed, as follows, in the attempt to explain these phenomena.

Crescents exist in those who are without trace of fever—excluded by examination ; crescents are few, but would be detected on examination of a thick film—excluded by examination ; crescents are selected from the blood by the mosquito by a chemical taxis—no evidence forthcoming ; the first subtertian cases are relapses—demonstrated as without foundation ; anopheles surviving from the previous year carry on subtertian infection—impossible ; direct anopheline carriage of parasites from man to man misses the sexual phase—rejected on accurate experiment. A process of exclusion leads *in our present state of knowledge** to the conclusion that the subtertian epidemic must be due either (1) to infection apart from mosquitoes—a supposition contradicted by thousands and thousands of facts, or (2) that there are not 3 but 1 species of malaria parasite, the forms passing exceptionally into one another. Grassi indeed claimed that he had observed the penetration [not necessarily the fertilization] of a female tertian by a male subtertian gamete, an observation not published at the time, but awaiting the hope of its recurrence being noted.

[Regretfully in the circumstances, it must be indicated that it is not possible to agree with the exactness of either the process of exclusion or of reasoning.]

C. L.

* The passage is italicized in the original.

RUBITSCHUNG (Otto). **Die Wiederholung des Kurventyps der Leukozyten für akute Infektionen bei jedem Anfall von Malaria tertiana.** [The Leucocyte Curve of Acute Infections of Tertian Malaria.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. May 1. Vol. 29. No. 5. pp. 217–243. With 5 charts in text. [14 refs.]

From observation of seven cases of injected tertian malaria the writer concludes that there occur prodromal variations in the leucocytes: with the rigor a neutrophil increase with Arneth shift to the left; with the crisis a monocytosis; and in the interval a lymphocytosis. The shift to the left begins immediately after inoculation.

C. L.

LARREGLA (Santiago). **Estudio hematológico de treinta palúdicos.**—*Siglo Médico.* 1925. June 27. Year 72. Vol. 75. No. 3733. pp. 656–659.

Of 30 invalided cases investigated in Madrid most were tertian, quartan came next in frequency, and in 2 cases crescents were found. Leucocytes averaged 4,100, while the average differential counts in and between attacks were for lymphocytes 44·3 and 42·1, for large mononuclears 6·8 and 8·4, for polymorphs 47·1 and 47·6. Arneth's count showed a shift to the left. Erythrocytes averaged 4,500,000, and haemoglobin 48 per cent.

C. L.

JONESCO (D.) & POPPER (M.). **Sur la cirrhose hépato-splénique paludéenne. A propos de l'article de M. Millous: "L'hépatite scléreuse atrophique ascitogène métasplenomegalique paludéenne."**—*Paris Méd.* 1925. Mar. 14. Vol. 15. No. 11. pp. 253–254. [2 refs.]

Disagreement is expressed with the identification of Banti's disease with malarial hepatitis and splenic cirrhosis. In the former there is progressive fibrosis of the Malpighian follicles and loss of the germinative centre which is frequently replaced by hyaline masses with sometimes thrombosis and fibrosis of trabeculae. In malaria there is not.

C. L.

GAGE (A. T.). **Note from a Cultural and Commercial Point of View on the Use of Cinchona Alkaloids in the Treatment of Malaria.**—*Trans. Roy. Soc. Trop. Med. & Hyg.* 1925. Jan. 15. Vol. 18. No. 7. pp. 345–352.

LANE (Clayton). **On Certain Aspects of the Use of Cinchona and its Alkaloids in the Treatment of Malaria.**—*Ibid.* pp. 352–358. (Discussion pp. 358–369.)

This discussion, originating in a Critical Review (this *Bulletin*, Vol. 21, p. 849), was inaugurated by Col. Gage. Passing from north to south there occur in the Andes the natural habitats of *Cinchona succirubra*, *C. officinalis* and *C. calisaya*. The first alkaloid separated from the bark being quinine, and its therapeutic effectiveness being so marked, there was brought about the substitution in already started plantations of *C. officinalis* and *C. calisaya*, rich in quinine, for the robust but poor *C. succirubra*. From this last, originally planted in India, there had been produced the Indian cinchona febrifuge as the total alkaloidal precipitate from the bark, and when, under the demand

for quinine, it was replaced by *C. ledgeriana* and its hybrid with *succirubra*, quinine was separately extracted from the bark, and it was the residual alkaloid and not the total alkaloid which was henceforward sold as cinchona febrifuge. This in 1922 had the following general constitution :—

Amorphous alkaloid	33	Quinine	10.5
Cinchonine	23	Non-alkaloid	1·5
Cinchonidine	7	Insoluble	3
Quinidine	16	Water	6
			100

In 1913 was instituted the first agreement between the Java planters and the quinine manufacturers (90 per cent. of bark comes from Java), with an immediate rise in the price of quinine. As a direct result of the preponderating demand for quinine rather than for the other alkaloids of cinchona, selection in planting has given to the barks of *C. ledgeriana* and its hybrid with *succirubra* the following constitution :—

	C. ledgeriana.		*C. ledgeriana* x *succirubra.*	
	Percentage in stem bark.	Proportions of alkaloids.	Percentage in stem bark.	Proportions of alkaloids.
Amorphous alkaloid ...	0·60	10·4	0·54	11·9
Cinchonine ...	0·25	4·3	0·46	10·1
Cinchonidine ...	0·36	6·2	0·33	7·3
Quinidine ...	0·44	7·6	0·34	7·5
Quinine ...	4·14	71·5	2·87	63·2

If there now arise a demand for alkaloids other than quinine, their shortage will cause a repetition of the conditions which arose in India in 1875—a demand for these alkaloids as the result of the recommendations of the 1866 Commission causing a rise in their price out of all proportion to their therapeutic value. Such a demand could only be met by selection and growth, over a term of years, of trees whose bark is rich in the desired constituent. In view of the serious cultural and commercial consequences involved it was urged that no such demand should be made without clear evidence of its desirability. It was further urged that the most promising means of rapid increase of the world's cinchona alkaloids lay in the planting of *C. succirubra*, a robust species and one yielding more bark than others ; the extraction of the total alkaloids as cinchona febrifuge, a cheap and rapid process ; and, by mixture of bark on a sufficient scale aided, in time, by selection of trees, the production of an alkaloidal mixture with a reasonably steady composition.

Clayton Lane pointed out that we know almost nothing regarding the varying concentration of quinine in blood, nothing exact as to the time relation of this to dosage, and have no evidence that extracorpuscular stages of malaria parasites are more vulnerable than others. He suggested that in cultures containing increasing percentages of quinine it should be possible to observe whether development were checked at the extracorpuscular stage, and, if this were so, whether the concentration concerned had any relationship to that which is

found in the circulating blood after administration of quinine. If, however, it were not quinine but, as the facts suggest, some metabolite which was plasmodicidal, then the more quinine excreted in the urine, the less metabolite was presumably formed. On the same supposition, since metabolism of quinine is effected principally in the intestines, liver and kidneys, the drug's efficacy would depend, not on its solubility, but on the facility for metabolism of the form used. He asked for information as to the effect of sugar coating of tablets. Did it make them, as the French suggest, insoluble? Was amorphous alkaloid a varying mixture of active and inert substances? What is the reason for the varying reports on the intramuscular injection of quinine?

Mr. Bernard Howard said that a sugar coating is distinctly porous; a hygroscopic salt will burst this, with blame to the manufacturers. Under the sugar an impervious subcoat is accordingly used. From the chemist's point of view he deprecated the return to an unstandardized cinchona febrifuge.

Sir David Prain gave his experience that cinchona febrifuge was more potent than quinine, and amorphous alkaloid than the febrifuge.

Professor Swellengrebel noted his experience of tablets with a relatively insoluble coating. In Holland rapid and permanent cure is effected by quinine in cases having had 15 to 20 paroxysms.

Mr. Jowett emphasized that no pure sugar will remain without discoloration in the tropics. He had analysed coatings containing 100 per cent. of French chalk. A coating can be tested readily and simply by dropping the tablet in water and watching the result.

Sir Leonard Rogers noted the observation that intramuscular injection of quinine never gave cinchonism as evidence of slow absorption.

C. L.

Acton (H. W.) & Chopra (R. N.). **The Concentration of Quinine in the Circulating Blood.**—*Indian Jl. Med. Res.* 1925. July. Vol. 13. No. 1. pp. 197–204. [7 refs.]

It being held that quinine cures subtertian malaria more readily than tertian because sporulation of *P. falciparum* occurs in the mesenteric vessels, and that it acts best in an alkaline medium, further experiments to test these points were undertaken on cats. These received, by mouth, or injected by needle into the stomach or intestine, 0·1 gm. of quinine as base or as bihydrochloride, and blood from the mesentery was tested for quinine at intervals of half, one, and two hours, the amounts being estimated as quinine base. Considering only comparable experiments, in one cat the injection of the bihydrochloride into the mid-ileum gave in "the mesenteric blood" 0·01, 0·008 and 0·072 gm. at the intervals noted; while the mean concentrations in two others (after a preliminary mid-ileum injection of a drachm of sodium bicarbonate and 45 minutes later one of quinine base) were 0·0182, 0·0156 and 0·0134. It is concluded that the administration of alkalis before quinine nearly doubles the quinine concentration in the mesenteric blood. [In view of the weight which these experiments will carry in India it seems obligatory to point out that there was more than one variant in the two sets. The alteration in the kind of quinine introduced an alteration in solubility, and in the quinine content to the extent of 20 per cent. The introduction

of a drachm of bicarbonate of soda implies the injection of at least 11 drachms of water, which was not duplicated. Presumably the exposure of the intestines was 45 minutes longer in one set than in the other.]

Injections into the intestine of alkali and quinine base produced concentrations, in milligrammes per cc. of quinine base, amounting in mesenteric blood to 0·014, 0·0152, 0·015 and 0·015, while those in the jugular vein were respectively 0·01, 0·007, 0·008 and 0·01. It is concluded that quinine concentration is greater in mesenteric than in systemic blood, probably owing to the absorptive action of the liver. The mere dilution of portal by systemic blood would, however, presumably produce a greater effect than that noted.

C. L.

Belonovsky (G. D.) & Balkovsky (A. A.). **Essai de traitement du paludisme par la quinine opsonisée.**—*C.R. Soc. Biol.* 1925. June 26. Vol. 93. No. 22. pp. 152–153. [1 ref.]

The writers believe that quinine only acts when there are present in the blood "opsonins" to attach it to red corpuscles. These they believe they obtain by drawing off blood into a syringe containing 1 cc. of splenic extract and 2 cc. of 50 per cent. quinine bihydrochloride, mixing, and reinjecting after 2 or 3 minutes. The blood must be drawn during a paroxysm, for parasites must be present in numbers. Injections are repeated with every access. After the third injection the temperature generally falls.

C. L.

Urchs (Oswald). **Beobachtungen mit der Chinindarreichungsmethode nach Ochsner.** [Quinine given by Ochsner's Method.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. June 1. Vol. 29. No. 6. pp. 283–287.

Ochsner's method of giving quinine every two hours for 30 doses was tested in Dutch Guiana in 59 cases (11 tertian, 8 quartan, 20 subtertian and 20 in which no parasites were found). Defervescence was not accelerated, quinine discomfort was increased, relapses were more frequent, and natural immunity judged delayed.

C. L.

Griffitts (T. H. D.). **Eight Weeks' Quinine Treatment for Malaria. A Report of Results as observed in a Community with a High Malaria Incidence, in Dale County, Alabama.**—*Public Health Rep.* 1925. Mar. 20. Vol. 40. No. 12. pp. 539–548. With 2 text figs.

A marked instance of man-made malaria emanating from a reservoir established for power purposes in 1921. Early in 1923, with no anopheles yet reported, and none caught after careful search, thick smears from 87 persons showed 32·2 per cent. infected, 17 with tertian, six with subtertian, four with both these forms, and one with quartan parasites. Of infected cases, 57·1 per cent. showed gametocytes. The United States 8-weeks Standard Treatment was administered from June 19th onwards. Of 7 who took 95 per cent. of the full treatment, 42·9 per cent. were found infected within 10 days of its

completion. Of 19 taking 90 per cent. the figure was 21·2 ; of 15 taking 80 to 90 per cent. it was 26·7 ; of those taking 50 per cent. 11. *A. maculatus* reached a maximum of 11 per house.

C. L.

McRobert (G. R.). **Intramuscular Quinine.** [Correspondence.]—*Indian Med. Gaz.* 1925. Mar. Vol. 60. No. 3. pp. 140–141.

Emphatically dissenting from the extreme statement that the intramuscular injection of quinine should be held malpraxis [this *Bulletin*, Vol. 22, p. 403], McRobert, while agreeing that the systematic pumping in of a tissue-destroying substance is unsound, points out that where vomiting prevents oral administration, and excessive fat prevents intravenous medication, the choice lies between exposing a vein and giving an intramuscular injection. "Except in desperate cases the latter method is the lesser of two evils."

C. L.

Fletcher (William). **Rectal Injections of Quinine.**—*Bulls. Inst. Med. Research, Federated Malay States.* 1924. No. 1. 20 pp. With 10 figs.

The conclusions reached by the author regarding the rectal administration of quinine [this *Bulletin*, Vol. 20, p. 970] were so contrary to accepted opinion that the Colonial Advisory Medical and Sanitary Committee suggested that the symptoms occurring might be due to some unrecognized factor. Fletcher has accordingly retested the matter. The evidence, impartially marshalled, is as follows. Quinine bihydrochloride from Howards & Sons was used throughout.

A 25 per cent. solution rectally injected into guineapigs was not retained—not absorbed, as is evidenced by survival after ten times the lethal dose. Asiatic patients, encouraged by a reward of more than a day's pay for the best stayer, retained 2½ to 5 grains per ounce for longer than 20 minutes in only 12 of 103 tests, the record established being 35 minutes. A healthy European, believing they were not really trying, accepted per rectum 20 grains in 4 ounces of salt solution, but retired beaten in 10 minutes.

Absorption of quinine by rectum, as judged by the effects of Mayer's reagent on the urine was poor, irregular and unreliable (as a number of photos testify), and as judged by the effect on parasites in the blood undependable, for in 11 of 16 cases parasites, comprising all species, were still present after a week's treatment, but disappeared speedily and without exception on using oral administration. Photos of a number of test tubes containing shreds and mucus picked from enema results are figured. It is concluded as before that "quinine is too irritating for administration per rectum. It should not be given by this route if any other means are available." The evidence, which seems singularly convincing, merits careful study in the original.

C. L.

Marchoux (E.). **Action exclusive de l'arsenic (stovarsol) sur le paludisme à** *Plasmodium vivax*.—*Ann. Inst. Pasteur.* 1925. Mar. Vol. 39. No. 3. pp. 197–208. [40 refs.]

Seven persons inoculated with benign tertian malaria were treated with a single intravenous injection of sodium stovarsol, equivalent

to about 0·75 gm. of acetylaminophenylarsenic acid. The older pigmented plasmodia disappeared first leaving the erythrocyte unharmed, for such are to be found with Schuffner's dots still evident. No parasites were found after 24 hours. Three cases relapsed within 2 months. In 12 natural infections with *P. vivax*, similarly treated, plasmodia rapidly disappeared. In 11 infections with *P. malariae* and 12 with *P. falciparum* no change occurred in the parasites. Treparsol, and more so stovarsol urethrane, produced toxic symptoms. It is pointed out that such a pharmaceutical difference constitutes another evidence of specific distinction.

C. L.

WHITTINGHAM (Harold E.). **The Treatment of Malaria by Novarsenobillon.**—*Proc. Roy. Soc. Med.* (War Section.) 1925. Aug. Vol. 18. No. 10. pp. 23–31. [7 refs.]

Of 93 benign tertian malarias treated in England 78 received novarsenobillon with 41 per cent. of relapses, 5 received quinine with 60 per cent. and 10 both drugs with 30 within 8 weeks of ceasing treatment. NAB dosage was mainly by injections of 0·45 gm. weekly for 6 weeks and then 3-weekly for 3 months. Quinine dosage was 30 grains of the hydrochloride daily by mouth for a week, 20 grains for 4 weeks, and 10 grains for 8 weeks. Quinine, on collected evidence, is held to clear parasites from the peripheral blood in 3 to 4 days, while NAB does it in one. Relapse percentages within three weeks of ceasing treatment are quoted from ACTON, STEPHENS, and JOHNSON as 75, 54 and 23·8 respectively; while Whittingham's for NAB are 29. "There is no uniformity in the results of quinine treatment." The unstated inference is that there will be for NAB.

In discussion POWELL and MACARTHUR pointed out that malaria will develop in those undergoing treatment by salvarsan, which could not be relied upon to check malaria.

C. L.

PITSCHUGIN (P. I.). **Das Methylenblau bei Behandlung von Malaria bei Kindern.** [Methylene Blue in the Treatment of Malaria in Children.]—*Jahrb. f. Kinderheilkunde.* 1925. May. Vol. 108. No. 5–6. pp. 347–353. [17 refs.]

If a week in bed without other treatment did not cure *P. vivax* infection the children were given in addition, three times daily for seven days, a centigramme of methylene blue and of nutmeg for each year of age. Consequent changes in the parasites are noted. Fever ceased in 3 to 5 days. Parasites disappeared. Stomach, intestines and kidneys were unaffected. No relapses occurred. Treatment of walking cases was not so successful.

C. L.

BOYD (J. E. M.). **Carbolic Acid in Malaria.**—*Jl. Roy. Army Med. Corps.* 1925. Aug. Vol. 45. No. 2. pp. 138–139.

Of 3 cases in which carbolic acid was administered crescents disappeared in one, diminished in another, while in the third the effect on them is not noted. The dose advised is 1 minim, with

1 minim of tincture of iodine, three times daily for three days, whereupon the doses are increased to two minims for three days, and to three for another 4 days.

C. L.

KORTEWEG (P. C.). **Over kwikbehandeling van malaria.** [Mercury in the Treatment of Malaria.]—*Meded. v. h. Rijks-Inst. v. Pharmaco-Therap. Onderzoek.* 1925. No. 9. pp. 7–11. With 1 chart in text. [4 refs.]

Five general paralytics were given their first inoculation with tertian malaria and from that day received a daily injection of 10 mgm. of perchloride of mercury. Malaria appeared as usual and was allowed to run to 12 paroxysms, the mercury being religiously continued, after which a gramme of quinine put an end to the manifestation, as the chart dramatically shows.

C. L.

MALARIACOMMISSIE VOOR NOORDHOLLAND. **Jaarverslag der Wetenschappelijke Malariacommissie voor Noordholland over 1924. (Uitgebracht aan den Minister van Arbeid, Handel en Nijverheid.)** [Annual Report for 1924 of the Scientific Malarial Commission for Noordholland.] [ALDERSHOFF (H.), Chairman, KORTEWEG (P. C.), Secretary.]—34 pp. With 1 chart in text. 1925.

BUREAU POUR L'ENCOURAGEMENT À L'EMPLOI DE LA QUININE, AMSTERDAM.—**Smalarina Cremonese ce qu'on en pense aux pays-bas et aux Indes Néerlandaises.**—46 pp. 1925.

The regular work of the Commission has been carried through with the usual thoroughness. Perhaps the most generally interesting part of the report is the summary it gives of Dutch findings regarding smalarina, much of the detailed information regarding which is obtained for this abstract from a pamphlet, issued by the "Bureau pour l'encouragement à l'emploi de la quinine," Amsterdam, which consists of a series of reprints of papers by Dutchmen of responsible position published without further comment.

In Communication 8 of the State Institute for Pharmaco-Therapeutical Research signed by the Institute's President and Secretary it is noted that smalarina packets bear the intimation that each tablet contains mercury 0·00153, antimony 0·0031, iodine 0·0097 gm. in organic combination. The writers' analysis confirms the weights, but, since they could separate iodide of mercury *mechanically*, disposes of the question of organic combination. CREMONESE refused to the North Holland Commission any information as to the composition of the remedy. Indeed, a circular by the "Societe in Accomandita Consorzio Neoterapico Nazionale," of Roma, which informs the public that Smalarina Cremonese has been tried in many parts of the world with brilliant success, states that no one but Professor CREMONESE knows its composition. Evidence of the efficacy of smalarina is offered by CREMONESE in the statement that there are found in the blood necrotic macrophages containing necrotic benign tertian parasites. The Commission confirms HAGA, of Weltevreden, Java, in the conclusion that these bodies are but improperly stained erythrocytes with Schuffner's dots, drawn on that generous scale necessary to uphold their new dignity. In such cases as were clinically tested, parasites

persisted until quinine was given. Finally smalarina is held to act only several months after its exhibition, and to depend for its efficacy on the season, while all opposition is held as biassed enmity. There is much caustic writing in the pamphlet, and considerable amusement to be derived from its perusal.

C. L.

Low (George C.) & Gregg (A. L.). **"Smalarina" in Malaria.**—*Lancet.* 1925. June 27. pp. 1339–1341. [1 ref.]

One case of benign tertian and two of tertian malaria were confined to bed and given the full course of smalarina lasting 32 days. In no case did the parasites alter in appearance or disappear; nor was the fever controlled. On the contrary, in the two subtertian cases, the grave condition supervening necessitated the giving of quinine once or twice during the smalarina course. "Smalarina appeared to have absolutely no effect of a beneficial nature."

C. L.

Ferrari (Antonino). **A Dosagem da quinina na urina e seu valor na clinica.** [The Estimation of Quinine in the Urine and its Use in Practice.]—*Rev. Med.-Cirurg. do Brasil.* 1925. May. Vol. 33. No. 5. pp. 253–256.

The author used Giemsa's solution—equal parts of sublimate 18/000 and potassium iodide 200/000—for estimating the excretion of quinine. On addition of the patient's urine a bluish white disc appears at the line of contact. If this forms in one minute the urine contains 1 : 25,000 quinine; in two, three, or five minutes 1 : 30,000, 1 : 40,000 and 1 : 50,000 respectively. If there is albumen the urine must be rendered free by boiling. Half a gramme by mouth begins to be eliminated in 30 minutes and reaches a maximum in 8 hours; by intramuscular injection, in 15 minutes with a maximum between the sixth and ninth hours; intravenously administered it appears in 5-10 minutes and ends in 18-21 hours. The total amount eliminated varies normally between 25 and 75 per cent. If the amount is below 15 per cent. the outlook is bad, if above 75 per cent. there is hypersensitiveness to quinine. The test is of value as indicating the absorptive power of the stomach when the drug is given by mouth, and also the activity of the renal function.

H. Harold Scott.

Sergent (Et. & Edm.) & Catanei (A.). **Etude expérimentale du paludisme des oiseaux** (*Plasmodium relictum*). **Suite des essais de traitement par des produits autres que la quinine : cinchonine (XXVIII^e Note).**—*Arch. Inst. Pasteur d'Algérie.* 1924. Dec. Vol. 2. No. 4. pp. 443–454. With 6 charts in text. [2 refs.]

—— & ——. **Résumé des essais de traitement préventif ou curatif par les alcaloides du quinquina (XXIX^e Note).**—*Ibid.* pp. 455–457. [6 refs.]

The first, and certain previous, papers are summarized in the second,

as follows. They refer to *P. relictum* in canaries. Quinidine proved too toxic to use.

	Quinine.	Cinchonine.	Cinchonidine.
Fatal dose—			
Single	6 mgm.	3 to 4 mgm.	4 mgm.
Repeated daily ...	1 mgm. kills about 25th day.	1 mgm. killed 5 of 12 about 20th day, 2 mgm. killed 3 of 3 about 30th day.	2 mgm. kills from 10th day to 20th day.
Curative dose	With 2 to 4 mgm. parasites disappear in less than 48 hrs.	The similar dose is 3 to 6 mgm.	Toxic doses are required.
Preventive dose ...	0·7 mgm. daily.	1 to 2 mgm. daily, but less effective than quinine.	0·8 to 2 mgm., but less effective than quinine.
Action on splenomegaly	0·7 mgm. daily, effect marked.	No effect.	1 to 3 mgm. Effect very marked.

C. L.

Barber (M. A.) & Komp (W. H. W.) with the Co-operation of Clark (H. C.). **Report on some Malaria Work done in the Tela and Guatemala Divisions. January-February, 1925.**—*Thirteenth Ann. Rep. Med. Dept. United Fruit Company, Boston, Mass.* 1924. pp. 213–223. With 1 fig.

The method of Barber and Komp of staining thick films without previous decolorizing (*ante* p. 406) gave 27·7 per cent. of positives, as against 18·9 with thin films. The time spent on the former " probably did not average over 3 minutes." Clark, who was responsible for the statement that young rings did not stain by this technique, has had advantage of two months' work with the other writers and, in a personal communication, corrects his previous statement, as follows :—

" My technique was corrected and very excellent results gained in staining all stages of the malarial parasites. The stain used can give wide variations in results, but a good Giemsa stain such as Grubler's Azur II Eosin and Azur II prepared as they direct is satisfactory. A good Leishman's stain serves well also. The next important step is to use water with a proper pH such as is present in freshly-caught rainwater (not from a roof) or at least a water with a range of 6·6 to 7·6 pH. The method deserves general use where large number of persons are being regularly examined, and many cases will be detected that are missed by using the thin film method of examination. It permits the use of a much thicker film than I have ever been able to decolorize by any of the old acid-alcohol methods."

C. L.

DE LANGEN (C. D.) & ROSKOTT (E. R. A. Luyke). **Bijdrage tot de kennis van de verhouding tusschen erythrocyt en malariaparasiet.** (**Zij ligt** *op* **en niet** *in* **de roode bloedcel.**)—[Relation between Erythrocyte and Malaria Parasite. It is situated *on* and not *in* the Red Bloodcell.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 2. pp. 141–149.

Contrary to SCHAUDINN'S opinion and in accordance with LAVERAN'S views on this subject, the authors' investigations led them to the conclusion that the malaria parasite does not enter the red cell, but attaches itself to the surface of the chromocyte, or lives in the membrane of the cell. This cell membrane consists of lipoids, especially cholesterol and lecithin. BRINKMAN and VAN DAM showed that these substances can be washed away separately. The authors succeeded in washing away the lecithin from the cell membrane, using a specially adapted Ringer's solution. By careful technic, for the details of which the original paper should be seen, haemolysis could be prevented. In films made of samples of blood containing numerous tertian or subtertian parasites after this treatment the cells containing parasites were found to be rare, whilst free mature parasites were seen. The subtertian parasite attached itself more firmly to the cell membrane than the tertian.

W. J. Bais.

PEREKROPOW (G. I.). **Zur Frage ueber die lytische Wirkung des Blutserums von Kranken auf Malariaparasiten. (Ueber Schizontolysinen Abrami u. Carnot.).** [Lytic Action of the Blood Serum of Patients on Malarial Parasites.]—*Rev. Microbiol. et Epidémiol.* Saratov. 1924. Vol. 3. No. 3. In Russian pp. 155–159. [13 refs.] German summary pp. 221–222.

Blood removed immediately before an attack did not culture, during the onset might grow to 2 generations, rather later in the attack gave better results, and after the attack cultured well. The presence of parasitic degeneration showed that the failure to grow was not due to phagocytosis. It is held to be due to antibodies in the serum. The evidence offered is that, substituting for the patient's serum that of one who had never had malaria, culturing was good, and it was nearly as good if the man's own serum, heated previously to 55° or 56° C. were substituted for his untreated serum.

C. L.

NICLOT (V.). **A propos de l'emploi préventif de la quinine dans le paludisme.**—*Bull. Soc. Path. Exot.* 1925. Mar. 11. Vol. 18. No. 3. pp. 268–271. [2 refs.]

The head of the French Base Hospital at Salonica with its 20,000 beds recounts the widespread evasion of the taking of prophylactic quinine, only checked by surprise demands for urine. A medical unit is instanced where the vice of those who deliberately abstained from prophylactic quinine was suitably punished by their becoming the only prey of the plasmodia.

C. L.

LEGENDRE (J.). **A propos de l'efficacité de la quinine préventive.**—*Bull. Soc. Path. Exot.* 1925. Mar. 11. Vol. 18. No. 3. pp. 272–278. [7 refs.]

Legendre returns to this matter. A fifth of a food ration is admittedly useless. If it be maintained that a fifth of a curative quinine ration is insufficient to prevent malaria, the curative effect of a full ration is not thereby questioned. The estimated value of prophylactic quinine rests too much upon uncontrolled Authority. It is illogical to suggest, for example, that because only 20 per cent. of immigrant newcomers, all taking prophylactic quinine, become infected with malaria, quinine has protected 80 per cent. of them. The other preventive measures, taken by individuals, must be known, and the whole must be controlled by the infection rate of those other unprotected newcomers, the indigenous infants. In addition to the literature in English on the Macedonian Campaign and on the Panama Canal Zone, stress is laid on the brothers SERGENT's failure to protect canaries from *P. relictum* with prophylactic doses of quinine equivalent to 2 gms. daily in a man, and on Warrington YORKE & MACFIE's and HANSCHELL's similar experience in man.

C. L.

FOLEY (H.) & BROUARD (M.). **Action comparative de la quininisation prolongée à petites doses sur** *Plasmodium praecox* **et** *Pl. vivax* **chez les indigènes porteurs de germes.**—*C.R. Soc. Biol.* 1925. Apr. 3. Vol. 92. No. 12. pp. 958–960. [1 ref.]

Among 70 children, of whom in April, 1924, 14 carried *P. falciparum* and to whom quinine sulphate was given for six months in daily doses of 0·1 to 0·4 gm. according to age, none showed the parasite in December, although 27 had done so in the previous December. One smear and three thick drops were made for each examination.

C. L.

SÉGUIN (T.). **Note sur la prophylaxie quinique du paludisme.**—*Bull. Soc. Path. Exot.* 1925. Feb. 11. Vol. 18. No. 2. pp. 153–157.

Prophylactic quinine should be taken in one daily dose of 0·5 gm. with the evening meal and at no other time. "It is, moreover, probable that it is easier to destroy a small number of sporozoits on their introduction into the vessels than schizonts more or less inured to quinine, or than merozoites formed from them and without doubt more or less quinine resistant as they are." [Warrington YORKE & MACFIE's work would show that sporozoits are quinine resistant, and schizonts are not. (This *Bulletin*, *ante* p. 50.)]

C. L.

NICOLAÏ (A.). **Ervaringen met de vierde-daagsche chinine-kuur als prophylacticum tegen malaria.** [Experiences with the Fourth Day Quinine Prophylaxis against Malaria.]—*Geneesk. Tijdschr. v. Nederl.-Indië.* 1925. Vol. 65. No. 1. pp. 50–54.

Nicolaï used ZIEMANN's quinine prophylaxis in 556 coolies on three estates during one year (1923). The malaria rate in this group was 40 per cent. less than in 1922. In the non-treated control group (3,163 coolies on 11 estates) the malaria rate decreased by 25 per cent.

in 1923 in comparison with 1922. Considering only new infections, *i.e.*, patients who had not suffered from malaria during the previous 1½ years, there was practically no difference in the malaria prevalence in the two groups (decrease of 36 per cent. against 40 per cent. in the controls). The number of relapses decreased by 41 per cent. in the treated, by 22 per cent. in the non-treated group. The author ascribes this difference to the quinine prophylaxis. ZIEMANN founded his fourth day quinine prophylaxis upon MARIANI's finding that quinine could be detected in the urine of patients during 3 days after administration of 1 gramme of quinine hydrochloride. Nicolaï found that in two series of 99 and 25 patients quinine disappeared much more quickly from the urine.

As a prophylactic *sensu strictiori* quinine administration every fourth day is of little value ; it can to a certain extent prevent relapses, but not the new infections.

W. J. Bais.

PIJPER (A.) & RUSSELL (E. D.). **Observations on Inoculated Malaria.**— *S. African Med. Rec.* 1925. May 9. Vol. 23. No. 9. pp. 178–192. With 5 charts in text. [28 refs.]

Fifty cases of subcutaneously injected malaria, nearly all tertian, are dealt with. In contrast to the experience of BEN-HAREL with canaries (this *Bulletin*, Vol. 21, p. 138), there was evident an incubational rise in erythrocytes, both in number and in total bulk, which terminated with the detection of parasites in the peripheral blood. Stress is laid upon the presence of the initial fever described by KORTEWEG (*l.c.* Vol. 22, p. 54) ; indeed, those cases in which it does not occur are judged to be non-primary attacks. Spontaneous cure occurred in 44 per cent. of the cases ; a circumstance which suggests that when, contrary to the experience of others whom they quote (HANSCHELL, *l.c.* p. 60), they believe they have found in two injections of novarsenobillon of 0·6 gm. each a *therapia magna sterilisans* for early tertian malaria, the explanation may be otherwise. Possibly the fact that two strains of tertian malaria were used, one producing mild, the other high fever, and that their distribution among the patients is not indicated, may be an essential factor. It is confirmed that no correlation exists between the number of parasites injected and those present in the circulating blood, nor between the latter and the degree of fever.

C. L.

LILLY (G. A.). [Reported by.] **The Treatment of General Paralysis at Hanwell Mental Hospital.**— *Jl. Mental Science.* 1925. Apr. Vol. 71. No. 293. pp. 267–278.

The strain of benign tertian malaria received from Endsleigh Gardens showed stronger reactions latterly, whereas the same strain passed on to Hanwell required "refreshing." No difference in effects was noted between 30 cases of subcutaneous injection and three cases in which infection was carried by Col. JAMES's mosquitoes. Treatment was by 2 grains of quinine sulphate 3 or 4 times a day for two months. "No signs or symptoms of malarial trouble reappeared after the first administration of quinine."

C. L.

ELDRIDGE (Watson W.), and a Committee consisting of LIND (John E.), SILK (Samuel A.) & TRENTZSCH (P. J.). **Treatment of Paresis: Results of Inoculation with the Organism of Benign Tertian Malaria.**—*Jl. Amer. Med. Assoc.* 1925. Apr. 11. Vol. 84. No. 15. pp. 1097–1101. [1 ref.]

Of 64 cases inoculated subcutaneously with 2 cc. of blood obtained just after a paroxysm of benign tertian malaria, 10 never showed a paroxysm. The incubation period of the others was 7 to 34 days; the fever—quotidian, tertian, or irregular—subsided spontaneously in 17. Treatment was by 160 grains of quinine sulphate during 11 days. Two, from an unstated category, relapsed.

C. L.

HERRMANN (G.). **Jahresbericht ueber die Malariabehandlung der progressiven Paralyse an der Deutschen Psychiatrischen Klinik in Prag im Jahre 1924.**—*Med. Klin.* 1925. Mar. 13. Vol. 21. No. 11 (1057). pp. 395–398. [15 refs.]

In 60 cases of general paralysis inoculated with malaria, evidently tertian, two skin eruptions occurred: in a diabetic, urticaria coincident with fever; in one undergoing phlogetan treatment, extreme pallor followed by redness of the eyes and whole body. A man injected on 3rd had his first fever on 8th and died on 21st of September of a ruptured spleen, which weighed 750 gms. Failures to infect mosquitoes with these constantly injected strains are mentioned, and their consequent presumed hygienic safety is reiterated. [See, however, PLEHN, *ante*, p. 408.]

C. L.

CLARK (R. M.). **Treatment of General Paralysis by Malaria.** [Memoranda.]—*Brit. Med. Jl.* 1925. Mar. 28. p. 600.

SILVERSTON (J. D.). **Malarial Treatment of General Paralysis of the Insane. Ice Method of Inoculation.** [Correspondence.]—*Lancet.* 1925. Apr. 4. p. 737.

The technique of POTZL, of Prague. The sterile fluid from defibrinated malarial blood can be kept iced and infective for at least 65 hours, so that successful inoculation has been obtained from blood removed at Whittingham, Preston, and sent to London on ice. Parasites stain well after 7 days in the ice chest.

C. L.

i. RUDOLF (G. de M.). **The Malarial Treatment of General Paralysis of the Insane.** [Correspondence.]—*Lancet.* 1925. Apr. 11. pp. 793–794.

ii. ANTIĆ (D.). **Experimentelle Reproduktion der Malaria.**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. May 1. Vol. 29. No. 5. pp. 203–216. [15 refs.]

iii. CLAUDE (Henri) & TARGOWLA (René). **Sur le traitement de la paralysie générale par le paludisme expérimental et les antisyphilitiques associés.**—*Bull. et Mém. Soc. Méd. Hôpit. de Paris.* 1925. June 4. Year 41. 3rd Ser. Vol. 49. No. 19. pp. 795–805. With 2 text figs. [1 ref.]

iv. Ten Raa (M. J.). **Malaria-enting bij dementia paralytica.** [Malarial Injection in Dementia Paralytica.]—*Nederl. Tijdschr. v. Geneesk.* 1925. July 25. Year 69. 2nd Half. No. 4. pp. 465–478. With 2 charts in text. [6 refs.]

v. Jagić (N.) & Spengler (G.). **Mesaortitis luetica und Malariakur.**—*Wien. Klin. Woch.* 1925. July 30. Vol. 38. No. 31. p. 859. [5 refs.]

i. Defibrinated blood has travelled 170 miles by ordinary post and given satisfactory results.

ii. In one of four cases, inoculated in Belgrade, schizonts and gametocytes appeared within 48 hours of inoculation. No blood examination was, however, made before the inoculation, and two of the cases recorded were actually natural local infections with *P. falciparum*.

iii. Three of 30 tertian malarias subcutaneously injected relapsed after receiving 1 to 1·5 gm. of quinine daily for a few days.

iv. The usual experience. Occasional spontaneous disappearance, and general ready cure.

v. The malarial treatment of Wagner-Jauregg for general paralysis was applied in 19 cases which were judged by anginoid pains and other signs to have aortitis. The aortic symptoms benefited.

C. L.

Bulletins de la Société de Pathologie Exotique. 1925. Mar. 11. Vol. 18. No. 3. pp. 227–230.—**Instruction pratique pour la lutte contre le paludisme.**

A considered reply by French experts to a request from the Minister for the Colonies for an authoritative pronouncement on malaria prophylaxis. It intimates that the local expert sanitary service must be made responsible for local campaigns, which must be planned from the beginning in accordance with financial resources, and from which there should be no recession. The measures recommended, as all-essential, under special circumstances, are: antilarval, anti-imaginal (screening, nets, capture, animal protection), antiparasitic (quinine, preventive and curative). In different regions these have different relative values. Special emphasis is laid upon the need of incriminating the special local anopheline host. The daily prophylactic dose of quinine is put at 0·2 gm. (3 gr.), and 0·4 in special circumstances. But above all measures is placed productive betterment of the country, better and lighter housing, better food, regular life, all tending to increased bodily resistance.

C. L.

Maxwell (C. N.). **Malaria Prevention and Farming.**—*Medical Bulletin.* Kuala Lumpur, F.M.S. 1923. No. 3. 4 pp.

A paper by Maxwell, of the Malayan Civil Service, giving food for thought. Krian provides an object lesson in correct farming, the right product—rice—planted in the right place—the coastal plain—in the right manner—the weathering of grass and rice stubble, its soakage, and its final incorporation in the wet soil; there being direct evidence by Watson and Lambourne "that the highly fastidious and exclusively select malaria carriers decline to breed in water impregnated with the gases given off by chopped grain." Domestic animals which graze are included among grass-chopping machines. "Lambourne

found that ponds in which cultivated fish were fed on chopped grass and animal excreta were free from malarial carriers." *Haplochilus panchax* is held the best mosquito-larva destroyer, being active, viviparous, a surface lurker ; a breeder in salt or fresh water, and so hardy that you can dry it on a towel, leave it for three hours on a table, after which it will swim off at once in water fresh or salt. It is held that the economic and natural method of attacking *Anopheles maculatus*, the hill-stream liver, will prove to be, not by encouragement of undergrowth, not by burying streams, but by impounding water and stocking it with deliberately grass-fed fish.

C. L.

Sergent (Edm.), Sergent (Et.) & Foley (H.). **L'eau et la fièvre au Maroc. Notes de voyage (janvier 1924).**—*Arch. Inst. Pasteur d'Algérie.* 1924. Sept. Vol. 2. No. 3. pp. 368–390. With 21 text figs. [10 refs.]

A number of photographs illustrate how undisciplined, vegetation-harbouring water, actually or potentially stagnant, has been tamed, civilized and rendered malarially harmless by removal of its vegetation and attention to its banks ; and how, by neglect, it lapses again to dangerous savagery. Water without fever can be obtained only by co-operation between engineer and hygienist.

C. L.

Ruchadze (N.). **(Gagry). [Die Bekämpfung der Malaria in Gagry (Georgien-Kaukasus) im Jahre 1923.] 1924. Suchum.** [Summarized in *Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Apr. 1. Vol. 29. No. 4. pp. 193–194.]

Roukhadzé (N.). **La campagne antipaludique à Gagry en 1923 et 1924.**—*Bull. Soc. Path. Exot.* 1925. May 13. Vol. 18. No. 5. pp. 389–392. With 1 chart in text.

In Gagry sanitary care, which included the opening of certain lagoons to the sea and their flushing with water from the electric station, had held malarial incidence at 10 per cent. After the revolution it rose, reaching 90 per cent. in 1922, and its inhabitants fled. Energetic treatment and antilarval measures, especially oiling, led to the following changes between spring and autumn of 1923. Registered cases 61 and 17 per cent., splenic index 73 and 40, parasite index 44 and 17, Ross's index 3·3 and 2·2. In the whole of 1924 ten new cases, an incidence of 2·5 per cent., were recorded. The predominant parasites were *P. malariae* in winter, *P. vivax* in spring, and *P. falciparum* in autumn. Nearly half the quartan cases were ambulatory.

C. L.

Roubaud (E.). **Les principes directeurs de la prophylaxie pratique du paludisme.**—*Bull. Soc. Path. Exot.* 1925. Feb. 11. Vol. 18. No. 2. pp. 199–214. [9 refs.]

In support of Marchoux [*Sanitation Supplements* 1925. p. 105] Roubaud urges the insufficiency of the ordinary French prophylactic procedure. Quinine will only extirpate malaria if all carriers be found and disinfected, an impossible task, he holds. He brings before French

readers the striking effects produced by Malcolm Watson through antilarval measures [*Sanitation Sup.*, 1925, pp. 100–103]. Agricultural improvement, as an anti-malarial measure, is held to act, exclusively and without question, through the provision of an animal screen, rendered adequate by such antilarval measures as keep the anopheline population permanently below the level where they cease to be able to feed their fill on the cattle which they are held to prefer. No fresh facts are adduced.

C. L.

Houle (E. C.) & Harris (H. A.). **Malaria Control by Quinine.**—*Southwestern Med.* 1925. June. Vol. 9. No. 6. pp. 229–232.

Drainage and oiling being inapplicable to 500 miles of railway land, and the dwellings being unfit for screening, quinine sulphate in protective, or rather " abortive," doses of 10 grains on two consecutive nights reduced admissions between 1919 and 1923 from 208 to 67 annually in a force averaging throughout in the neighbourhood of 900. It is pointed out with evident intention that the Italian Government provides quinine at fixed price, at or near cost, and compels its being stocked in shops.

C. L.

i. Boudreau. **La quinine est-elle nécessaire aux impaludés ?**—*Jl. Méd. de Bordeaux.* 1925. June 25. Vol. 102. No. 12. pp. 515–518.

ii. Dhairyam (J.). **The Treatment of Malaria in Pregnant Women.**—*Indian Med. Gaz.* 1925. Apr. Vol. 60. No. 4. pp. 165–166.

iii. Raju (K. V.). **Quinine Plus Alkalies in the Treatment of Malaria.**—*Ibid.* May. Vol. 60. No. 5. pp. 212–213.

iv. Blanchard & Keruzoré (A.). **Remarque sur le formiate de quinine employé en injection.**—*Ann. de Méd. et de Pharm. Colon.* 1925. Jan.–Feb.–Mar.–Apr. Vol. 23. No. 1. pp. 102–104.

v. Salim (Tewfik). **Stibenyl bei der Malaria.**—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Apr. 1. Vol. 29. No. 4. pp. 183–186.

vi. Jachontow (J. E.). **Cuprum Kalium cyanatum bei Malaria.**—*Deut. Med. Woch.* 1925. May 8. Vol. 51. No. 19. p. 785.

i. Regarding Lombardi's report (*ante*, p. 50) that quinine should be supplemented by brain extract when given to malarial epileptics, Boudreau urges that tincture of iodine in doses increasing to 1,000 drops a day, and continued until normal health is restored, is preferable. He is not interested in the parasitic diagnosis of his cases.

ii. Heavy doses of potassium bromide were combined with intramuscular and oral quinine.

iii. Tests proved favourable to Sinton's quinine and alkali treatment. It is proposed to repeat them with controls.

iv. Of ampoules from two sources, each purporting to contain quinine formate, the one batch was very acid, the other very alkaline. Mixed, they gave a heavy precipitate. It should be stated on ampoules, it is held, whether they contain an acid or a basic solution.

v. In three cases in which stibenyl was combined with quinine crescents persisted for 28, 16 and 27 days, and then disappeared.

vi. It is concluded that the drug gives little hope of successful cure, but that quinine preparations are likely to require activation by copper.

C. L.

i. Valcke. **Malaria congénitale.**—*Bull. Méd. du Katanga.* 1925. Feb. Vol. 2. No. 1. pp. 3–5. [4 refs.]

ii. Deuskar (V. N.). **An Unusual Case of Malaria.**—*Indian Med. Gaz.* 1925. Mar. Vol. 60. No. 3. pp. 122–123. With 1 chart in text.

iii. Mollow (W.). **Ein Fall von eigenartigen Nagelveränderungen bei Malaria quartana chronica.** [A Curious Alteration in the Nails in Chronic Quartan Malaria.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Apr. 1. Vol. 29. No. 4. pp. 186–189. With 1 text fig.

iv. Zito (Egidio). **Del punto doloroso sulla regione splenica dei malarici della sua interpretazione.**—*Riforma Med.* 1925. Mar. 30. Vol. 41. No. 13. pp. 289–291. [13 refs.]

v. Khera (Krishan Lal). **An Unusual Effect of Malaria upon the Heart.**—*Indian Med. Gaz.* 1925. May. Vol. 60. No. 5. p. 219.

vi. Gonzalo (G. R.). **Hemofilia y anemia paludica.**—*Siglo Médico.* 1925. May 23. Year 72. Vol. 75. No. 3728. pp. 530–531.

vii. Znamenski (W.). **Zur Klinik der Malariaerkrankungen des Nervensystems.**—*Russian Jl. Trop. Med.* 1924. No. 4–5–6. German summary p. 120. [In Russian.]

viii. Campbell (W.). **Notes on a Case of Spontaneous Rupture of the Spleen in Malaria.**—*Jl. Roy. Army Med. Corps.* 1925. June. Vol. 44. No. 6. pp. 457–459.

ix. de Hartogh, Jr. (J.). **Geestelijke stoornissen bij malaria tertiana.** [Mental Disturbances in Tertian Malaria.]—*Nederl. Tijdschr. v. Geneesk.* 1925. July 25. Year 69. 2nd Half. No. 4. pp. 482–483. [2 refs.]

i. Plasmodia of unnoted species were found in the two-days-old child. It was born at 8 months of a malarial mother.

ii. Vomiting, acute abdominal pain and urticaria recurring abruptly led to the finding of tertian and subtertian parasites. All disappeared under quinine.

iii. In a microscopically established case of four months' standing the nails showed dark brown lines, 2 or 3 mm. apart, concentric with the margin.

iv. The writer confirms Pagniello's sign. Pain is present in 90 per cent. of malarial cases, absent in all others, when the tip of the finger is drawn along the lower left intercostal spaces.

v. Malarial tachycardia of 210 per minute disappeared under quinine.

vi. A man harbouring "Laveran's parasites," suffering from repeated epistaxis, and judged from his history to have a haemophilic taint, had erythrocytes 2,000,000 per cubic mm., and haemoglobin 40 per cent. Under quinine injections and cacodylate of soda these improved to 3,800,000 and 75.

vii. The summary states that malaria produces changes in the whole peripheral nervous system.

viii. Two cases are noted, one by the editors, of soldiers who died of spontaneous rupture of the spleen in benign tertian malaria, in one while the man was in hospital.

ix. In two cases an acute confusional condition was detected as malarial by blood examination, and disappeared, with the parasites, under quinine.

C. L.

i. François-Dainville (E.) & Gallais (G.). **Sur un cas de paludisme local. Différenciation avec le paludisme autochtone.**—*Rev. Méd. et Hyg. Trop.* 1925. Jan.–Feb. Vol. 17. No. 1. pp. 13–15. [1 ref.]

ii. Pittaluga (D. G.). **Observaciones sobre el paludismo en Macedonia griega.** [Malaria in Greek Macedonia.]—*Siglo Médico.* 1925. Mar. 21. Year 72. Vol. 75. No. 3719. pp. 293–296.

iii. Sidgwick (H. C.). **A Case of Laceration of Enlarged Malarial Spleen, with Rupture of the Vessels at the Hilum. Splenectomy. Recovery.**—*Jl. Roy. Army Med. Corps.* 1925. Apr. Vol. 44. No. 4. pp. 288–290. With 1 text fig.

iv. Goyena (Juan Raúl). **Cirrosis esplenohepática palúdica. (A propósito de un caso de hepatitis esclerosa atrófica, ascitógena, pigmentaria, anictérica, metaesplenomegálica.)**—*Semana Méd.* 1925. Apr. 2. Vol. 32. No. 14. (1629.) pp. 729–732. [10 refs.]

v. Weiss. **Ueber die Blutuntersuchung auf Malariaparasiten. Eine Methode für die Praxis.**—*Med. Klin.* 1925. May 15. Vol. 21. No. 20. pp. 743–744.

vi. Ipatjewa (A.). **Die Blutkörperchenresistenz und die Autohämolyse bei Malaria.**—*Russian Jl. Trop. Med.* 1924. No. 4–5–6. German summary p. 120. [In Russian.

vii. ——. **Ueber die blutgefässverengende Stoffen des Blutes bei Malaria.** [A Vaso-Constrictor Substance in Malarial Blood.]—*Ibid.* German summary p. 120. [In Russian.]

viii. Abbatucci (S.). **Une nouvelle conception de la prophylaxie antipalustre.**—*Presse Méd.* 1925. July 1. Vol. 33. No. 52. pp. 883–884. [2 refs.]

i. It is proposed to distinguish autochthonous from local malaria, the former spreading and indicating suitable conditions, the latter a single case, not spreading even in the household, and apparently occurring where malaria had existed in previous years.

ii. A second Spanish communication emphasizing the need which the influx of over a million refugees into the Sturma and Vardar valleys imposes to push forward large-scale antimalarial work carried out by co-ordination of the economic and scientific measures at the State's disposal.

iii. In spite of quinine, given for an indeterminable period, after removal of the 520 gm. spleen, an acute paroxysm of benign tertian malaria occurred, cured by more quinine.

iv. A hard shrunken liver with splenomegaly and 9 litres of ascitic fluid are, in the absence of the Wassermann reaction and in the presence of a malarial history, attributed to the latter.

v. The writer describes and advocates diagnosis by the thick drop.

vi. Repeated examinations of 27 cases showed that the erythrocyte resistance was lessened in apyrexia, chronic malaria, and at the height of the attack. Quinine did not affect it. Autohaemolysis was rare.

vii. Perfusion through a rabbit's ear of blood drawn during a malarial attack gave fewer drops per minute than did the blood of a healthy person.

viii. The zoophilic hypothesis of Roubaud and an accompanying adaptation of the proboscis are accepted as proved. It is advised that larvae and adults should be attacked at their winter cyclical asthenia.

C. L.

i. Hapke (F.). **[Die Malariabekämpfung in Emden und Umgebung mit Berücksichtigung der Massnahmen für den Standort Emden.]**—*Veröffentlichungen auf dem Gebiete der Medizinalverwaltung*, Berlin. R. Schoetz. 1924. Vol. 19. No. 1. [Summarized in *Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Apr. 1. Vol. 29. No. 4. pp. 192–193.]

ii. Adelheim (R.). **[Verbreitung der Malaria in Lettland.]**—*Latrijas ārstu žurnala.* 1924. g.; 12. burtu Dec. [Summarized in *Arch. f. Schiffs- u. Trop.-Hyg.* 1925. July 1. Vol. 29. No. 7. p. 344.]

iii. Hatori (J.). **Malarial Survey of School Children of Taihoku Province, N. Formosa.**—*Taiwan Igakkai Zasshi (Jl. Med. Assoc. of Formosa).* 1925. Feb. No. 239. English summary pp. 2–3. [In Japanese.]

iv. Australian Hookworm Campaign. **Final Report of the Australian Hookworm Campaign. 1st October, 1919, to 30th September, 1924.** [Sweet (W. C.), Director.] **Part II.—Report on a Malaria and Filaria Survey of Australia and on Mosquito Surveys in Queensland, Western Australia and Northern Territory.**—37 pp. With 1 map. September 1, 1922, to August 10, 1924.

v. Higier (Heinrich). **Zum Verlauf der perniziösen oder sog. tropischen Hirnmalaria (Meningo-encephalitis haemorrhagica comatosa).**—*Muench. Med. Woch.* 1925. Apr. 3. Vol. 72. No. 14. pp. 559–560. [2 refs.]

vi. de Laet. **La malaria au Katanga.**—*Bruxelles Méd.* 1925. Mar. 15. Vol. 5. No. 20. pp. cdlxxviii–cdlxxx.

vii. Furuichi (T.). **Examination of the Kidney Function of Malarial Cases.**—*Taiwan Igakkai Zasshi (Jl. Med. Assoc. of Formosa).* 1924. Nov. No. 237. English summary pp. 3–4. [In Japanese.]

viii. Nell (Andreas). **Mosquitoes and Malaria.**—*Jl. Ceylon Branch Brit. Med. Assoc.* 1925. Jan. Vol. 22. No. 1. pp. 174–175.

i. Tertian malaria, first recognized in and about Emden in 1906 and increasing in 1910, was attributed to work on ditches; a recrudescence in 1915 to poor drainage. The yearly incidence, including recurrences, from 1918 onwards has been 252, 438, 958, 5,015, 3,955, 793, 638, 420. The 4,107 new attacks, mostly in children, in 1918 are attributable in part to under-nourishment.

ii. Latvia has received a number of malarial Russian immigrants, some of whom showed fever for the first time after their arrival. In Riga, hitherto non-malarial, cases are appearing in the spring, and anti-malarial work is required.

iii. *Plasmodium vivax*, *P.* "*immaculatum*" and *P. malariae* affected 23,000 children in the autumn of 1921 in the proportion of 72, 68, 10. The highest parasite index was 16·5, the highest splenic index 50. The effect on bodily growth is obvious. Chinese are more affected than Japanese.

iv. Of 9,022 persons examined for malaria 44, and of 14,949 for filariasis 379, were found infected. The anopheline host has not yet been determined.

v. A man who had never left mid-Europe was suddenly attacked with headache, delirium and coma. No malaria parasites were found in the blood after deliberate search. The cerebrospinal fluid showed a positive Wassermann reaction, and, after centrifuging and using the precipitate as a thick drop, rings of "Plasmodium falciforme."

vi. A special report, issued in 1922 by Orenstein of the Johannesburg gold mines, recommended for Katanga a special malarial personnel headed by a medical man or an engineer with special powers, a free hand, and a judgment by results. It remains a report.

vii. The kidney function, tested by phenol sulpho-phthalein, was found normal in uncomplicated malaria.

viii. In 1854-1855 Sir Richard Burton noted that, according to Somalis, mosquito bites bring on deadly fever, and commented that they confused coincidence with cause.

C. L.

ANIGSTEIN (Ludwik). **Studja zbiorowe komisji Ligi Narodów nad malarja w Europie południowej i wschodniej. Malarja w Państwach Bałkańskich. Studien der Malaria Komission des Völkerbundes. Malaria in den Balkan-Staaten.**—*Medycyna Doświadczalna i Społeczna.* Warsaw. 1925. Jan.-Feb. Vol. 4. No. 1–2. pp. 122–137. German Summary pp. 137–138.

BARBIERI (Antonio). **Concepto de la lucha antipalúdica y su legislación. Consideraciones y procedimientos sugeridos por la observación y estudio en Italia de junio a octubre de 1924.**—*Semana Méd.* 1925. Mar. 5. Year 32. No. 10 (1625). pp. 509–527. With 15 text figs. [5 refs.]

BERING (Fr.). **Die Malariabehandlung im Frühstadium der Syphilis des Zentralnervensystems.**—*Muench. Med. Woch.* 1925. May 1. Vol. 72. No. 18. pp. 719–722.

FOLEY (H.) & BROUARD (M.). **De l'emploi de la quinine à faibles doses comme réducteur du réservoir de virus dans le paludisme des indigènes.**—*C.R. Soc. Biol.* 1925. Mar. 27. Vol. 92. No. 11. pp. 859–861.

—— & ——. **Démonstration de l'efficacité de la quininisation quotidienne, à petites doses, comme réducteur du réservoir de virus dans le paludisme des indigènes.**—*C.R. Acad. Sci.* 1925. Mar. 30. Vol. 180. No. 13. pp. 1076–1078.

GIORDANO (Davide). **Ablazione di grossa milza in un malarico che da alcuni anni era travagliato da febbre.**—*Riforma Med.* 1925. Mar. 30. Vol. 41. No. 13. pp. 296–297.

GROSSMAN (S.). **Wagner-Jauregg Treatment of Dementia Paralytica.**—*Lancet.* 1925. July 4. pp. 16–18. [6 refs.]

IZKOWITSCH. **Ueber die volkstümliche Methoden der Malariabehandlung im Novo-Nikolajewer Gouvernement.**—*Russian Jl. Trop. Med.* 1924. No. 4-5–6. German summary p. 120. [In Russian.]

LOPATINE (G. M.). **A la question de la malaria innée.**—*Rev. Microbiol. et Epidémiol.* Saratov. 1924. Vol. 3. No. 4. In Russian pp. 291–294. [13 refs.] French summary pp. 308–309.

MCALISTER (W. M.). **The Results of the Treatment of General Paralysis by Malaria.**—*Jl. Mental Science.* 1925. Apr. Vol. 71. No. 293. pp. 236–240.

MÜNZER (Franz Theodor) & SINGER (Ernst). **Ueber den Einfluss der Malariabehandlung auf den Hämolysintiter im Serum und Liquor cerebrospinalis von Paralytikern.**—*Med. Klin.* 1925. Feb. 13. Vol. 21. No. 7. (1053). pp. 247–252. [10 refs.]

PAGNIEZ (Ph.). **Le traitement de la paralysie générale par l'inoculation du paludisme.**—*Presse Méd.* 1925. May 30. Vol. 33. No. 43. pp. 717–719. [6 refs.]

PLEHN (A.). **Die chronische Malaria und ihre Behandlung.**—*Therapie der Gegenwart.* 1925. Mar. Vol. 66. No. 3. pp. 105–110.

RAYNAUD (Lucien). **La lutte contre le paludisme en Italie.**—*Rev. d'Hygiène.* 1925. Mar. Vol. 47. No. 3. pp. 193–238. With 6 figs.

RUCHADSE (N.). **Malaria im Dalschen Uschtschelje (Engpass)—Abchasien.**—*Russian Jl. Trop. Med.* 1924. No. 4–5–6. German summary p. 120. [In Russian.]

RUDOLF (G. de M.). **The Malarial Treatment of General Paralysis; some Psychological and Physical Observations.**—*Jl. Mental Science.* 1925. Jan. Vol. 71. No. 292. pp. 30–41. [16 refs.]

SKALWEIT (Wolf). **Luetinreaktion und Hämogramm bei Impfmalaria. (Untersuchungen mit Organluetin nach Busson.)**—*Muench. Med. Woch.* 1925. May 8. Vol. 72. No. 19. pp. 762–765. With 3 text figs. [18 refs.]

SPENCER (H. A.). **Prophylaxis in Malaria.**—*Jl. Trop. Med. & Hyg.* 1925. June 1. Vol. 28. No. 11. pp. 207–208.

VALLE (Vittorio). **Il problema della malaria nel Veneto.**—*Ann. di Med. Nav. e Colon.* 1925. Mar.–Apr. Year 31. Vol. 1. No. 3–4. pp. 142–168. [18 refs.]

WIZEL (A.) & PRUSSAK (L.). **Le traitement de la paralysie générale par l'inoculation du paludisme.**—*L'Encéphale.* 1925. Feb. Vol. 20. No. 2. pp. 99–109.

MEDICAL ZOOLOGY.

Kessel (John F.) & Svensson (Ruth). **A Survey of Human Intestinal Protozoa in Peking, China.**—*China Med. Jl.* 1924. Dec. Vol. 38. No. 12. pp. 961–982. [19 refs.]

In this survey, which was continued for six months, faeces-smears from 1,037 individuals, of whom 816 were Chinese (422 hospital patients, and 394 in apparent health) and the rest were resident foreigners, were examined, in 340 cases (268 Chinese) six separate times, in 466 cases (384 Chinese) once—for the entire 1,037 individuals an average of over three separate examinations. All smears found to be positive (by iodine-eosine) were afterwards stained in iron-haematoxylin, "*Councilmania lafleuri*" not being distinguishable from *Entamoeba coli* otherwise. The results of the survey are tabulated in diverse and very particular detail, and there is an interesting synoptical comparison of the big surveys of intestinal protozoa made in all parts of the world since 1917.

Among the Chinese the infestations with intestinal protozoa were as follows, in percentages: *Entamoeba nana*, 40·1; *E. dysenteriae* (=*histolytica*), 29·5; "*Councilmania lafleuri*," 19·2; *E. coli*, 11·7; *Iodamoeba buetschlii*, 13·0; *Giardia intestinalis*, 10·0; *Chilomastix mesnili*, 6·0; *Trichomonas hominis*, 4·5. Among the foreigners in Peking they were as follows: *E. nana*, 26·5; *E. dysenteriae*, 16·5; "Councilmania," 14·5; *E. coli*, 11·6; Iodamoeba, 3·2; Giardia, 3·0; Chilomastix, 10·0; Trichomonas, 2·8.

As regards *E. dysenteriae* (=*histolytica*), the percentage of infestations among Chinese adults was 32·5 and among Chinese children 25·3, the corresponding figures for the foreigners being 25·0 and 1·7; and the percentage among Chinese having intestinal symptoms was 30·4, and among healthy Chinese 23·2, the corresponding figures for the foreigners being 39·2 and 11·3.

A. Alcock.

Gelli (Giuseppe). **Parassiti intestinali e anemie nei bambini.**—*Giorn. di Clin. Med.* 1925. Mar. 20. Vol. 6. No. 4. pp. 121–125.

The author noticed that a considerable number of children of 5–12 years of age attending hospital were anaemic and for some time this anaemia has been denominated "anaemia due to growth and school-life." Further observation revealed an eosinophilia varying between 4 and 23 per cent. He, therefore, undertook a routine examination of the faeces of the patients and found in fully 50 per cent. (1,399 out of 2,750) the ova of worms, most frequently Trichuris and Ascaris. In two cases *E. histolytica* was seen and in two others *Giardia intestinalis*. In one of the latter there was severe anaemia: erythrocytes 2,800,000 per cmm. and haemoglobin 30 per cent. (C.I. 0·54), and it would appear, though not stated in actual words, that the author believes in a causal relation between the parasite and the anaemia.

Treatment with anthelmintics rapidly cured the anaemia, and the author wisely suggests that faecal examination should be carried out in all children with obscure nervous and intestinal conditions, particularly if they are anaemic.

H. Harold Scott.

Prates (Manuel Maximo). **Contribuição para o estudo da parasitologia intestinal humana de Moçambique. Dois anos de análises de fezes no Laboratório Bacteriológico de Lourenço Marques, 1921-1923.**— *Revista Méd. de Angola.* (No. especial 1e Congresso de Med. Trop. da Africa Ocidental. Vol. 4. 6a., 7a. e 8a. Sessões.) 1923. Aug. No. 4. pp. 367–380.

In this paper are given the results of faecal examinations carried out at the Lorenço Marques laboratory during the first two years of its existence. 1,687 specimens were examined and parasites of one kind or another were found in all but 498, or in 70·5 per cent. Of the 1,189 positive cases 617 contained one parasite only, 320 had two, and one as many as seven, namely: Amoeba, Giardia, Trichomonas, Ascaris, Trichuris, Ancylostoma and *Schistosoma mansoni*. The commonest infection was with Trichuris (40·27 per cent.), hookworm next (22·85 per cent.), amoebae (18·55 per cent.), *Sch. mansoni* (4·89 per cent.). It is curious to note that while infections with amoebae and flagellates were more common in patients exhibiting symptoms of intestinal disorder, other parasites were found more often in those apparently healthy, or at least showing no intestinal symptoms.

H. Harold Scott.

Yakimoff (W. L.) & Wassilewsky (W. J.). **Les protozoaires de l'intestin de l'homme pendant les épidémies de Pétrograde (1919–1921).**— *Bull. Soc. Path. Exot.* 1925. Feb. 11. Vol. 18. No. 2. pp. 183–191. [5 refs.]

This paper gives the results of the examination of 1,632 stools in Petrograd. The following species were found in percentages: Blastocystis, which the authors incline to regard as pathogenic, 15·7; Vahlkampfia, 3·1; *Entamoeba coli*, 6·1, also thought to be possibly pathogenic; *E. histolytica*, 0·6; *Chilomastix mesnili*, 1·4, causing diarrhoea and sometimes haemorrhagic colitis; *Oecomonas granulata*, 0·2, believed to cause diarrhoea; *Polytoma uvella*, 0·1; Monas sp., 0·1; *Trichomonas hominis*, 0·2; *Prowazekia ninae-kohl-yakinov*, 2·2, causing diarrhoea and dysentery; *Lamblia intestinalis*, 0·1; *Uronema caudatum*, 0·1; *Balantidium coli*, 0·06; besides unidentified amoebae 0·8, and flagellates 1·3.

A. A.

i. Castex (M. R.) & Greenway (D. J.). **Le rôle pathogène du** *Blastocystis hominis.*—*Bull. Soc. Path. Exot.* 1925. Feb. 11. Vol. 18. No. 2. pp. 132–137.

ii. —— & ——. **Le rôle pathogène du** *Chilomastix mesnili.*—*Ibid.* pp. 137–140. [7 refs.]

iii. —— & ——. **Les protozoaires dans l'intoxication intestinale.**— *Ibid.* pp. 177–183. [6 refs.]

i. The chief item of this paper, from Buenos Aires, is the statement regarding pure infestations of *Blastocystis hominis*. The authors have observed 88 such (out of 291 mixed with Protozoa), and they assert that these pure infestations are accompanied by symptoms that persist, despite all attempts at dietetic and therapeutic treatment, until the blastocystis is destroyed either by narsenol or stovarsol Poulenc, or by Iatren 105 Behring. The attributed symptoms are constant and long persistent gastro-intestinal dyspepsia, abdominal pain, flatulence, and alternating constipation and diarrhoea with

mucous or glairy and sanguinolent stools, and along with these a variety of nervous and mental troubles due to the intestinal toxaemia.

ii. Out of 118 infestations with *Chilomastix mesnili* the authors have observed 49 that were purely that one parasite, and that those cases of pure infestation were characterized by a train of symptoms that ceased only with the disappearance of that parasite as a result of treatment by thymol, or quinine and creosote, or narsenol or stovarsol Poulenc, or Iatren 105 Behring. The symptoms are chronic gastro-intestinal dyspepsia—pain, flatulence, constipation alternating with diarrhoea and tenesmus—in short permanent indigestion with intolerable periodic exacerbations.

iii. The same authors state that they have observed 614 cases of "entero-toxicosis," in 470 of which intestinal protozoa and blastocystis were present, and they have formed the opinion that these protozoa play just as important part as intestinal bacteria in the production of toxaemia; that they are all and at all times pathogenic.

The first stage in the pathological process is disclosed not by chronic diarrhoea or chronic dysentery, but by an intractable constipation alternating with fits of diarrhoea. It is to this intestinal stasis that most of the gastro-intestinal symptoms [*e.g.*, those mentioned in the two preceding papers] are attributed.

Toxaemic effects of a most diverse kind follow—vertigos, neuralgias, neurasthenias, disturbances of the endocrine equilibrium, particularly hypothyroidism and ovarian troubles—and are exhibited in a great diversity of symptoms, so the authors assert.

The most important of these pathogenic forms is *Blastocystis hominis* [see above]. Next comes *Entamoeba histolytica* when associated with other species; as a pure infection it is less commonly seen in Argentina. *E. histolytica* was observed in 31·7 per cent. of cases; most of the carriers suffered severely from "digestive perturbations." *Chilomastix mesnili* comes next [see above]; then *Giardia intestinalis*, found in 70 cases. *Entamoeba coli* was observed in only 101 cases, and as the sole infestation in only 14 of these.

The drugs upon which the authors particularly rely for the destruction of these intestinal protozoa are stovarsol Poulenc and Iatren 105 Behring. Stovarsol sometimes exacerbates the sympathetic nervous symptoms, and must then be stopped and be re-employed in smaller doses. With the disappearance of the parasites the symptoms abate.

A. A.

Hegner (Robert W.). **The Control of Intestinal Protozoa by Means of Changes in Diet.**—*Proc. Internat. Conference on Health Problems in Trop. America.* 1924. pp. 400–404. [United Fruit Company, Boston, Mass.]

The author's observations on the rarity of intestinal protozoa in carnivorous mammals, and his experiments on freeing rats from their intestinal flagellates by a carnivorous diet have been noticed here (Vol. 21, p. 703).

In the discussion Kofoid stated that carnivorous fishes and insects are not heavily infested with flagellates [but Nepa is a glaring exception to this general statement, and there are several other exceptions among rapacious insects]. He also confirmed (from experiment) the fact that protozoon infestations in rats are affected by modifications of diet. Bass referred to the fact that a carnivorous diet alkalizes

the intestinal contents and changes the intestinal flora completely. NUTTER had observed increase of flagellates in dysentery patients on milk diet. DEEKS had not investigated stools critically, but had frequently observed rapid improvement in cases of chronic diarrhoea when put on a balanced diet, though he could not say whether the protozoa were simultaneously affected, and, indeed, had never incriminated flagellates and ciliates *per se* as causative of diarrhoea. Hegner, in conclusion, explained that his experiments were designed to observe the effect of carnivorous diet upon flagellates, and that he had no certain knowledge as to the pathogenicity or otherwise of the flagellates.

A. A.

KOFOID (Charles A.). **Investigation on Intestinal Protozoa.**—*Carnegie Institution Year Book.* 1923. No. 22. pp. 279–280.

In the course of investigation of amoebiasis associated with a certain type of arthritis deformans a small form of amoebae has been observed which is interpreted as an involution form resulting from a high degree of resistance in supposed bone-marrow infection. In every instance, except one, of Hodgkin's disease examined there was concurrent intestinal amoebiasis—in the one exceptional case only a single specimen [? of stool] was available. From a study of three cases *Pentatrichomonas ardindelteili* is certified as pathogenic (see this *Bulletin*, Vol. 21, p. 773). The work on parasitic amoebic infections of rats and mice has already been noticed in this *Bulletin* (*ante*, p. 13). From a study of Giardia in dogs it is thought probable that the dog may prove to be a carrier to man.

A. A.

FANTHAM (H. B.). **Some Parasitic Protozoa found in South Africa. VI.**—*S. African Jl. Sci.* 1923. Dec. Vol. 20. pp. 493–500. [3 refs.]

——. **Some Parasitic Protozoa found in South Africa. VII.**—*Ibid.* 1924. Nov. Vol. 21. pp. 435–444. [7 refs.]

These papers are replete with interesting observations of "parasitic" protozoa found in animals of various classes, domesticated and otherwise, in S. Africa, the term "parasitic" being used in a general comprehensive sense and the parasites noticed being conveniently grouped in proper zoological sequence. Among the multitude of species that come under the author's observation here are an Entamoeba (*E. caprae*) found in a goat, one individual having remains of red blood corpuscles in its endoplasm, and an Entamoeba (*E. anatis*) in the faeces of a duck dead of acute enteritis; a Giardia (*G. suricatae*) in the meercat, and another (*G. xenopodis*) in the clawed frog; three several species of Eimeria in goats, pigs, and a fowl; Sarcocystis in sheep, cattle, and pigs; and *Balantidium coli* and *suis* in pigs.

A. A.

CLEVELAND (L. R.). **Les effets de l'inanition et de l'oxygénation sur la symbiose entre les termites et leurs flagellés intestinaux.**—*Ann. Parasit. Humaine et Comparée.* 1925. Jan. Vol. 3. No. 1. pp. 35–36.

It is now well known that all those termites that feed exclusively on wood harbour a congeries of symbiotic intestinal protozoa, and

die slowly if these are experimentally destroyed, though they recover if they are experimentally re-infected with the proper protozoa. The present paper, which does not include any details, contains the information that in the proper congeries of different species of protozoa that occupy the intestine of a given kind of termite some species are more immediately vital to the termite than others, both directly, and also indirectly by their influence on some of the other species. Full details are promised of the experimental evidence for these generalizations and also for the still more general statement that not only the symbiotic protozoa of termites but *all* protozoa are killed (in culture) by oxygenation.

A. A.

CLEVELAND (L. R.). **Toxicity of Oxygen for Protozoa** *in vivo* **and** *in vitro*: **Animals defaunated without Injury.**—*Biol. Bull.* 1925. June. Vol. 48. No. 6. pp. 455–468.

Quoting Paul BERT's demonstration of the general toxicity of oxygen in excess, the author describes his own experiments on the effect of various oxygen pressures upon termites and their intestinal protozoa. At a pressure of 3·5 atmospheres the protozoa were killed in 30 to 40 minutes, while the termites harbouring them were not killed until 45 hours. It was thus easy to remove all protozoa from termites without injury to the host. Experiments *ad hoc* showed that it was the partial pressure of oxygen, not the mere mechanical pressure, that mattered. The author continued his experiments on the effects of oxygen—upon parasitic protozoa and their hosts (cockroaches, earthworms, frogs and tadpoles, goldfish, salamanders and rats), upon cultures of Trichomonas, and upon free-living protozoa.

The results were such as to permit him to think it "highly probable that all intestinal flagellates and ciliates may be removed from all invertebrates and all cold-blooded vertebrates by oxygenation, without injury to the host." In the experiments with *rats*, however, the rats submitted to 3·5 atmospheres of oxygen did not live more than 5–6 hours and their intestinal protozoa were not killed in that time.

A. A.

KESSEL (John F.). **The Experimental Transfer of Certain Intestinal Protozoa from Man to Monkeys.**—*Proc. Soc. Experim. Biol. & Med.* 1924. Dec. Vol. 22. pp. 206–208. [2 refs.]

A preliminary report of the experimental infestation of monkeys with *Entamoeba coli* and *nana*, *Iodamoeba buetschlii*, *Chilomastix mesnili*, and *Trichomonas hominis*. The monkeys used, which came from southern China, were already harbouring amoebae structurally indistinguishable from *E. histolytica*.

A. A.

KOFOID (Charles Atwood). **Amoeba and Man.**—*Univ. of California Chronicle.* 1923. Apr. & July. pp. 149–170; 291–312. With 6 plates.

This is the Faculty Research Lecture of the University of California for 1922. It is addressed to the whole congregation of the University, and is an admirably clear description of the amoebae of the human

intestine, of the circumstances that recently brought them into unusual prominence and induced the author to study them critically, and of the general pathological significance of *Entamoeba histolytica*. It is an excellent account, well illustrated, and set down with as much modesty as cunning.

A. A.

KOFOID (Charles A.) & SWEZY (Olive). **The Cytology of** *Endamoeba gingivalis* **(Gros) Brumpt compared with that of** *E. dysenteriae* **with Special Reference to the Determination of the Amoebas in Bone Marrow in Arthritis Deformans of Ely's Second Type.**—*Univ. California Public Zool.* 1924. June 24. Vol. 26. No. 9. pp. 165–198. With 5 plates & 1 text fig. [40 refs.]

The characters of *Entamoeba gingivalis* are described in considerable detail. The structure of the nucleus of the motile phase (cysts are as yet unknown) is said to be sufficient to distinguish this species from *E. histolytica*; in *E. gingivalis* "the nucleus is proportionally smaller . . . is less regularly spherical, and more often deformed by pressure. The peripheral chromatin is less regularly distributed . . . and is often clumped in unequal masses . . . Some of these masses are connected with the karyosome by spoke radii."

The authors found no evidence of *E. gingivalis* in bone marrow in arthritis deformans of Ely's second type; the species evident was *E. histolytica*.

A. A.

WIGHT (Toynbee). **Notes on** *Councilmania lafleuri* **(Kofoid-Swezy 1921).**—*Proc. Soc. Experim. Biol. & Med.* 1925. May. Vol. 22. pp. 517–522.

The author has examined "many hundreds of stools and carefully stained preparations of specimens containing cysts and free forms" of entamoebae therefrom. He is satisfied of the existence of *free amoebae* possessing clear blade-like pseudopodia, and otherwise conforming well enough with KOFOID's Councilmania notion; but of thousands of these amoebae observed by him in the course of some years he has not found one that contained a red blood corpuscle: they are scavengers like ordinary *E. coli*. Having followed the *cysts* of these "Councilmania" amoebae, he finds (1) that there is no special difficulty in staining them; (2) that it is easy, by suitable staining, to demonstrate a ridge which, however, is part of the cyst wall—apparently a fold of the wall—and can be decoloured entirely, leaving the chromidial bodies deeply stained; and (3) that the "bud" and "pore" of this *non*-chromophile ridge cannot be detected in fresh saline smears, though after treatment with hot mercuric solution (Schaudinn) "a very large proportion of the cysts will now show protruding 'buds'—the 'pore' varying from a minute aperture to a frankly ragged tear in the cyst wall." The plain inference that these "buds" are artificial is corroborated by the impossibility of finding any detached amoebules in stools from which stained exhibits of budding cysts can easily be made, and also by the reflection that budding of amoebules in the bowel of the host is a sort of fault to nature and to reason.

The author's conclusions are that there are at least two types of *E. coli*. One of them has clear pseudopodia, is sometimes exceptionally motile, and seems to have a tendency to form cysts that are easily burst in hot Schaudinn solution—and answers perfectly to the description of Councilmania given by KOFOID and SWEZY. The other is the ordinary sluggish type; if a sufficient number of its cysts be concentrated and fixed in hot Schaudinn solution some of them probably will show the

peculiarities to which KOFOID & SWEZY have given the name "Councilmania." If budding be the distinction, the "organisms that we have been accustomed to include under the term *E. coli* are potential Councilmania." "If budding be a natural process *E. coli* must be the rarest of intestinal inhabitants and Councilmania the commonest."

A. A.

KESSEL (John F.). **The Eosin-Criterion of the Viability of Protozoan Cysts as applied to Cysts of *Hartmannella hyalina* treated with Chlorin-Water.**—*Jl. Parasit.* 1925. Mar. Vol. 11. No. 3. pp. 153–157. [5 refs.]

With reference to the criterion of viability of Protozoan cysts by the iodine-eosin stain, the author concludes that red cysts are incapable of development; that all green cysts are not viable, since a percentage of them may, after an interval, stain red or show plasmolysis; and that this interval should be considered in future applications of the eosin test.

A. A.

GANGULI (P.). **Is *Trichomonas hominis* Pathogenic?**—*Indian Med. Gaz.* 1925. Apr. Vol. 60. No. 4. p. 160.

The author upholds the opinion that *Trichomonas hominis* is pathogenetic. The arguments that he offers are (1) that in 36 out of 43 cases of diarrhoea or dysentery in Eastern Bengal this organism was present; (2) that in 3 of the dysentery cases no dysentery bacilli could be discovered by plating; (3) that in 6 of the diarrhoea cases Trichomonads with ingested red blood cells were found, although no blood cells could be found in the stools; (4) that red blood cells were not found within Trichomonads from any of the dysentery stools, in which blood cells were present; and (5) that Trichomonas can be eradicated by big doses of oil of turpentine emulsified with castor oil.

A. A.

DASTIDAR (S. K. Ghosh). **Trichomonas Infection in the Urine.**—*Indian Med. Gaz.* 1925. Apr. Vol. 60. No. 4. pp. 160–161.

In the course of about a thousand routine examinations of urine the author has observed Trichomonas in four cases—3 males, 1 female. In all four cases the urine was acid. In the three male cases pus cells were also present. In two of the male cases both Trichomonas and pus cells disappeared spontaneously. The author concludes that Trichomonas may cause a slight urethritis.

A. A.

HEGNER (Robert W.). *Trichomonas vaginalis* **Donné.**—*Amer. Jl. Hyg.* 1925. May. Vol. 5. No. 3. pp. 302–308. With 3 text figs. [7 refs.]

"Vaginal mucus obtained from 20 women in the United Fruit Company hospital at Tela, Honduras, and from 12 women in the United Fruit Company hospital at Port Limon, Costa Rica, was positive for *Trichomonas vaginalis* in 50 per cent. of the cases at each hospital." The organism is carefully described and figured.

A. A.

Hegner (Robert W.). **Intestinal Flagellates in Tropical America.**—*Amer. Jl. Trop. Med.* 1925. May. Vol. 5. No. 3. pp. 239–245. [7 refs.]

The author notes a high incidence of infestation with *Trichomonas hominis* and *Chilomastix mesnili* in the stools examined in United Fruit Company's hospitals at Tela and Port Limon, and thinks it may be explained by the hot and moist climate, the insanitary habits of the natives, and the vegetable complexion of the diet.

A. A.

Bozzolo (G.) & Graziadei (G.). **[Su un caso di diarrea cronica con presenza di "** *Tetramitus mesnili.***"]**—*Minerva Medica.* 1922. Nov. 15. No. 22. [Summarized in *Bull. Inst. Pasteur.* 1925. July 15. Vol. 23. No. 13. p. 568.]

The case, according to the summary, was in a man of 33 years, a sufferer for 7 years from diarrhoea that resisted all treatment. *Chilomastix mesnili* was found in abundance in the faeces and, in the absence of any evidence of tuberculosis or dysentery bacilli, was decided to be the cause. The treatment finally adopted was removal of the gall-bladder.

A. A.

i. Pons (R.). **Infection secondaire de l'utérus** *post partum* **par** *Chilomastix Mesnili.*—*Bull. Soc. Path. Exot.* 1925. Mar. 11. Vol. 18. No. 3. pp. 258–259.

ii. Hegner (Robert W.). **Excystation in** *Giardia lamblia* **from Man.**—*Amer. Jl. Hyg.* 1925. May. Vol. 5. No. 3. pp. 250–257. With 12 text figs. [1 ref.]

iii. Lavier (G.). **Deux espèces de** *Giardia* **du rat d'égout parisien** (*Epimys norvegicus*).—*Ann. Parasit. Humaine et Comparée.* 1924. Apr. Vol. 2. No. 2. pp. 161–168. With 2 text figs. [6 refs.]

iv. Nieschulz (Otto) & Krijgsman (B. J.). **Ueber** *Giardia simoni* **Lavier.**—*Arch. f. Protistenk.* 1925. Vol. 52. No. 1. pp. 166–169. With 2 charts & 2 text figs. [3 refs.]

v. Thomson (John Gordon). **A** *Giardia* **parasitic in a Bursate Nematode living in the Viscacha.**—*Protozoology* (Supplement to the *Jl. Helminthology*). 1925. May. No. 1. pp. 1–6. With 3 text figs. [21 refs.]

i. *Chilomastix mesnili* has been found in 0·3 per cent. of stools examined in the Saigon laboratory; but its spread from the intestine to the genital tract, as observed in this case, is worthy of notice.

ii. "It was found possible to separate the giardias that occurred in this stool into six types," the stool being one in which excystment was adjudged to be taking place. These six types are described and figured.

iii. Examination of 301 rats from the drains of Paris, 38 *rattus* and 263 *norvegicus*, disclosed Giardia in 6 of the latter. In 3 instances the species present was *G. muris*, in the other three it was a species structurally identical with *G. intestinalis* from man. The author therefore arrives by a circular route at the conclusion that it is a new species and styles it *G. Simoni*.

iv. These observers in the Netherlands (Utrecht) have found *Giardia simoni* Lavier in *Mus norvegicus* and in a white rat. They here make and graphically represent some comparisons between it and *G. muris* (Grassi) and they state that the parabasal body in *G. simoni* does not agree with the description of it given by its sponsor. A figure constructed from two specimens of *G. simoni* observed by them is compared with a reproduction of Lavier's figure of the species.

v. Nematode worms (Viannella sp.) taken from the intestine of two dead specimens of a Viscacha in the London Zoo were found to be very heavily infested with a species of Giardia "morphologically indistinguishable" from *Giardia viscaciae* Lavier. A bibliography of Giardia is annexed.

A. A.

Coventry (Frances A.). **The Reaction Product which inhibits Reproduction of the Trypanosomes in Infections with** *Trypanosoma lewisi*, **with Special Reference to its Changes in Titer throughout the Course of the Infection.**—*Amer. Jl. Hyg.* 1925. Mar. Vol. 5. No. 2. pp. 127–144. With 2 figs. [5 refs.]

The author adopts the belief that the natural resistance of the rat to its trypanosome is due to the development of a material product in the rat's blood, and the following summary of the conclusions from her experiments here recorded looks very much like an expression of familiar (yet abstruse) phenomena in materialistic terms:—

"The presence of the reaction product which inhibits reproduction of the trypanosomes could not be demonstrated in the blood of infected rats on the 5th day of infection. The reaction product must be present before the 5th day, because the rate of reproduction is declining by that time. There is a sudden, very great, increase in the titer of the reaction product between the 5th and 6th days of the infection. There is a gradual increase in the titer of the reaction product between the 7th and, approximately, the 35th days of the infection. There appears to be a decrease in the titer of the reaction product from about the 35th day to the end of the infection."

It may be explained that the titre of a serum was determined by using serum from rats at given intervals of the infection and injecting it, together with trypanosomes, in varying doses, into the veins of the tail of young rats. The effects were observed by successive timed examinations of blood films.

A. A.

Bruynoghe (R.) & Dubois (A.). **Action du radium sur les trypanosomes,** *in vitro.*—*C.R. Soc. Biol.* 1925. Jan. 30. Vol. 92, No. 3. pp. 213–215. [3 refs.]

This is a preliminary account of a study to be published hereafter *in extenso*. Exposing trypanosomes (*gambiense* and *brucei*), *in vitro*, to emanations of radium, under varying conditions of time and circumstance, the authors found it possible to deprive them of their virulence without depriving them of their mobility. They conclude that the alpha and beta rays act directly upon the trypanosomes and particularly upon the elements that preside over fission.

A. A.

Bruynoghe (R.) & Dubois (A.). **Action de dépôts radio-actifs sur l'infection à** *Trypanosoma ugandae* **du lapin.**—*C.R. Soc. Biol.* 1925. Mar. 13. Vol. 92. No. 9. pp. 752–753.

Document of an experiment of which the conclusion is that radio-active elements injected intravenâ into a rabbit have no influence on the evolution of an infection with *Trypanosoma ugandae*.

A. A.

Muijzert (P. C.). **Het vermogen van Trypanosomen om onbeleedigde conjunctiva en vaginaalslijmvlies te passeeren.**—*Tijdschr. v. Vergelijkende Geneesk. enz.* Leyden. 1924. Dec. 30. Vol. 11. No. 1. pp. 33–43. English summary p. 44. [26 refs.]

The experiments here summarized show that trypanosomes can penetrate the normal uninjured conjunctiva and vaginal mucous membrane and produce a general infection of the animal, provided a large number of trypanosomes be applied (and their application be repeated if necessary). The trypanosomes used were *T. brucei, equiperdum, evansi, gambiense, rhodesiense* and *venezuelense*, and the subjects of experiment 20 guineapigs (10 for each route), all of which took a general infection.

A. A.

Brumpt (E.). **Guérison d'infections mortelles de grenouilles dues au *Trypanosome Inopinatum* par le " Bayer 205." Etudes de diverses questions générales concernant la prophylaxie de la maladie du sommeil.**—*Revista Méd. de Angola.* (No. especial 1e Congresso de Med. Trop. da Africa Ocidental. Vol. 4. 6a, 7a, e 8a Sessões.) 1923. Aug. No. 4. pp. 131–139. [1 ref.]

The author emphasizes the convenience of *Trypanosoma inopinatum*, mortal to the frog, for the complete study of the effects of a trypanocide on an infection with a pathogenic trypanosome through both the vertebrate and the invertebrate host (in this case a leech).

His own experiments with " Bayer 205 " show that although this drug does not kill the trypanosome in culture, or *in vitro*, or in the living frog's blood, and although it does not inhibit the evolution of the trypanosome in leeches that have ingested blood of frogs under treatment with it, it is yet slowly, but decidedly, efficacious in the treatment of frogs suffering from the infection. It must therefore be assumed that the drug acts indirectly, either by strengthening the natural defences of the frog, or by suffering some modification in the living tissue of the frog.

A. A.

Soule (Malcolm Herman). **Microbic Respiration. III. Respiration of *Trypanosoma lewisi* and *Leishmania tropica*.**—*Jl. Infect. Dis.* 1925. Mar. Vol. 36. No. 3. pp. 245–308. With 2 charts in text. [23 refs.]

Both parasites require free oxygen for growth and multiplication. When grown in tubes having a capacity of about 100 cc. of air, *Leishmania tropica* consumed all of the O in about 144 hours, and *Trypanosoma lewisi* in about twice that time. *T. lewisi* was more sensitive to increasing partial pressures of O than *L. tropica*. A concentration of 50 per cent. O was the critical point for the growth of *L. tropica*; it was able to consume all this, and returned nearly 34 per cent. of CO_2. CO_2 was not essential to the life of the organisms. CO_2 in concentrations greater than 20 per cent. was toxic for *T. lewisi* even when excess of O was present; *L. tropica* was less sensitive. The value of the respiratory quotient increased with the duration of the experiment, and this was supposed to indicate secondary changes in the medium.

It has been the impression among workers that the composition and reaction of the culture medium is all that matters; the author appears to be the first to show that the gaseous environment must also be considered.

A. A.

Tanabe (Misao). [**Some Experimental Studies on Trypanosomes.**]—*Saikingaku Zasshi* (*Jl. of Bact.*). 1924. June. Nos. 339/340. [Summarized in *Japan Med. World.* 1924. Nov. 15. Vol. 4. No. 11. pp. 301–302.]

Trypanosomes of the *gambiense* species injected into mice kept starved for 3 or 4 days did not multiply in them so vigorously, but were just as quickly fatal as to the control animal. 5 of 7 mice infected with *T. gambiense* and 3 of 4 infected with *T. equiperdum* gave a positive Wassermann reaction and also a positive luetic precipitin test. The serum of a rabbit that had received an injection of killed *T. gambiense*, though it did not give a positive WR, yet contained complement fixative and imparted a certain degree of immunity.

A. A.

Taoka (Kiyowo) & Tanabe (Misao). [**Serological Diagnosis of Experimental Protozoan Diseases. Communication I. Serological Test of Experimental Trypanosomiasis.**]—*Saikingaku Zasshi* (*Jl. of Bact.*). 1924. Nov. No. 345. [Summarized in *Japan Med. World.* 1925. May 15. Vol. 5. No. 5. pp. 132–133.]

"The author observed that in several weeks from the trypanosome infection there developed a power to act positively for Wassermann and precipitation reactions. Even when the normal serum should have a positive Wassermann reaction it never acted positively for the precipitation. As soon as the serum of the trypanosomiasis rabbit becomes positive to Wassermann there developed oedema in the mucous membrane of the eyelids, mouth, and nose. A kind of reactive substance was, then, seen to have developed in the serum, and it was found to be completely equal to the luetic reactive substance. In saline organ-extracts of the rabbit suffering from trypanosomiasis no reactive substance could be proved."

A. A.

Iwanow (E.). **Le sort du** *Trypanosoma equiperdum* **dans la cavité générale de** *Galleria mellonella*.—*C.R. Soc. Biol.* 1925. Feb. 13. Vol. 92. No. 5. pp. 345–347. [2 refs.]

The author finds it quite easy to inoculate caterpillars of *Galleria mellonella* (the bee moth) with *Trypanosoma equiperdum* if the operation is aseptic, and he finds that at room temperature the trypanosomes proliferate in the caterpillars' blood and can still be observed there at the end of 9 days, the blood remaining infective for mice for 4 days longer. At a temperature of 5° C. the trypanosomes maintain their vitality even better. He suggests that bee-moth caterpillars might be used in place of guineapigs and mice for the laboratory ménage of trypanosomes.

A. A.

Simon (Clément), Flandin (Ch.), Séguin & Lecoq.—**Action,** *in vitro*, **des estraits pancréatiques sur le trypanosome du Nagàna et le** *Spirochaeta Gallinarum*.—*C.R. Acad. Sci.* 1925. May 18. Vol. 180. No. 20. pp. 1541–1542.

Certain organic extracts can act upon trypanosomes without any help from associated arsenic. An insulin prepared by extracting pancreas in acid alcohol and subsequent purification by picrate kills *T. brucei* (and

also *Spirochaeta gallinarum*), *in vitro*, in 30 to 35 minutes. The effect is not due to acidity of the preparation, and there is no lysis of the organism even with a concentrated solution.

A. A.

ERBER (Berthe). **Influence de la peptone sur la phagocytose des trypanosomes dans la lymphe de la grenouille.**—*C.R. Soc. Biol.* 1925. May 29. Vol. 92. No. 18. pp. 1422–1423. [5 refs.]

Experiments here reported consisted in injecting mouse-blood rich in trypanosomes (*T. brucei*) into the dorsal lymph-sac of frogs that had received an injection of peptone 18 to 24 hours previously, in comparison with frogs not treated with peptone. Phagocytosis was delayed as a consequence of treatment with peptone.

A. A.

SHORTT (H. E.). **Note on *Bodo phlebotomi* (*Herpetomonas phlebotomi*) (Mackie 1914) : A Reconsideration of its Generic Position.**—*Indian Jl. Med. Res.* 1925. July. Vol. 13. No. 1. pp. 141–142. With 1 plate. [1 ref.]

The discovery that the kala azar parasite develops into the flagellar form in the gut of *Phlebotomus argentipes* makes it imperative to avoid confusion between that form and other—presumably unimportant—flagellates associated with Phlebotomus. The author therefore has critically examined the original specimens of the flagellate discovered by MACKIE in *Phlebotomus minutus* and described by MACKIE as *Herpetomonas phlebotomi* [this *Bulletin*, Vol. 5, p. 282], and he gives his reasons for deciding that they are congeneric with Bodo rather than Herpetomonas.

A. A.

FANTHAM (H. W.). **Blood-Smear showing Experimental Infection with Herpetomonas.**—*Proc. Roy. Soc. Med.* (Sect. Trop. Dis. & Parasit.) 1925. June. Vol. 18. No. 8. p. 55.

Remarks upon a smear of blood of a rat on the 35th day after the animal had been inoculated, intraperitoneally, with a saline emulsion of the gut-contents of a house-fly naturally infected with *Herpetomonas muscae-domesticae*; the rat had been kept in an insect-proof cage ever since it had been able to feed itself and the blood-smear contained flagellates. A few young herpetomonads had been found in rat's blood on the 9th day after inoculation; none was found after the 35th day from inoculation though the blood was examined daily up to the 315th day.

A. A.

REICHENOW (Eduard). **Ueber das Vorkommen von zwei Coccidienarten der Gattung Isospora beim Menschen.** [On the Occurrence of Two Species of Coccidia of the Genus *Isospora* in Man.]—*Arch. f. Schiffs- u. Trop.-Hyg.* 1925. Apr. 1. Vol. 29. No. 4. pp. 172–178. With 3 text figs. [9 refs.]

In the fresh stool of a sailor suffering from amoebic dysentery, the author found, on a single occasion, two bodies which he identifies as spores of an *Isospora*. They were oval, measuring $16\mu \times 10{\cdot}5\mu$, and each contained 4 sporozoites and some residual inclusions. The oocyst supposed to contain them was not seen—as they lay in " a pretty thick mass of faeces "—and was therefore not measured.

Although these spores are not significantly different in any way from those of the now well-known species of *Isospora* occurring in man (*I. hominis* (Rivolta) Dobell), the author considers that they belong to a different species because they were passed in a fully developed state: and after some argumentation he reaches the conclusion that he is the first to rediscover the species of *Isospora* observed by KJELLBERG in 1860, and believes that he has been able to verify the hypothesis of WENYON [see this *Bulletin*, Vol. 20, p. 785] that two species of *Isospora* occur in man—not one, as other workers have supposed.

Clifford Dobell.

BARTO (A. J.) & SCHIJVESCHUURDER (W.). **Een geval van Coccidiosis** (*Isospora hominis*).—*Geneesk. Tijdschr. v. Nederl. Indië.* 1925. Vol. 65. No. 1. pp. 36–40. With 1 plate.

A European woman, 27 years of age, 2 years resident in the tropics, suffered from painful, slimy diarrhoea. In the stools *Isospora hominis* was found and no other intestinal parasites could be detected. Under the treatment, consisting of a cathartic, followed by bismuth and bolus alba and light digestible diet, the symptoms slowly subsided and the cysts disappeared gradually.

W. J. Bais.

SINTON (J. A.). **Bodies resembling Haemogregarines found in Smears of Human Blood.**—*Indian Jl. Med. Res.* 1925. July. Vol. 13. No. 1. pp. 29–31. With 12 figs. on 1 plate. [2 refs.]

Referring to WENYON'S paper on Haemogregarines in Man (this *Bulletin*, Vol. 20, p. 527) the present author describes critically, and figures, bodies having a remarkable resemblance to haemogregarines encountered by him in 10 out of 50 slides under examination for malaria parasites at Lahore. When the matter was investigated it was discovered that the fresh supply of distilled water had run out and some of the residue of a stock some months old produced. The author considers that this find strongly supports WENYON'S opinion of the nature of the reputed " haemogregarines " of human blood.

A. A.

i. YAKIMOFF (W. L.) & MILLER (G. A.). **Les protozoaires de l'intestin de l'homme en dehors de l'organisme de l'homme. L'examen de l'intestin des grenouilles de Pétrograde.**—*Bull. Soc. Path. Exot.* 1925. Apr. 8. Vol. 18. No. 4. pp. 306–309. [3 refs.]

ii. ——, WASSILEWSKY (W. J.) & ZWIETKOFF (N. A.). **Sur la culture des protozoaires de l'intestin.**—*Ibid.* Mar. 11. Vol. 18. No. 3. pp. 260–261.

——, —— & ——. **Influence du chlorure de sodium sur les cultures de protozoaires.**—*Ibid.* pp. 261–265.

iii. KESSEL (John F.). **The Distinguishing Characteristics of the Intestinal Protozoa of Man. A Syllabus for Clinicians.**—*China Med. Jl.* 1925. Feb. Vol. 39. No. 2. pp. 85–122. With 114 figs. on 8 plates. [20 refs.]

v. JOYEUX (Ch.). **Pénétration des parasites par la voie cutanée.**—*Ann. Dermat. et Syph.* 1924. May. 6th Ser. Vol. 5. No. 5. pp. 272–289. With 9 text figs.

v. França (Carlos). **Notes parasitologiques sur l'Angola.**—*Ann. Parasit. Humaine et Comparée.* 1925. July. Vol. 3. No. 3. pp. 255–262. With 3 text figs. [11 refs.]

vi. Stiles (C. W.) & Hassall (Albert). **Key-Catalogue of the Protozoa reported for Man.**—*Treasury Dept. U.S. Public Health Service. Hyg. Lab. Bull. No. 140.* 1925. May. 67 pp.

vii. Anderson (Ch.). **Note concernant les recherches pratiquées sur le latex de quelques Euphorbiacées de Tunisie.**—*Bull. Soc. Path. Exot.* 1925. Mar. 11. Vol. 18. No. 3. pp. 257–258. [1 ref.]

viii. de Jong (D. A.). **Over Balantidium-infectie.**—*Tijdschr. v. Vergelijk. Geneesk. enz.* Leyden. 1925. Mar. 11. Vol. 11. No. 2. pp. 105–110. With 3 figs. [8 refs.] English summary p. 110.

i. An uncritical paper tabulating the familiar Protozoa that live in the intestine of the common frog and toad. Some details are given of three spirochaetes from the same source, all named as "new species."

ii. (1) For the cultivation of certain intestinal [and coprozoic] protozoa, but not such forms as Giardia, Chilomastix, Trichomonas, etc., the authors use a medium of 10 per cent. bouillon, 90 per cent. water, and 1·2 gm. gelatin, to which they attach the name Frosch-Schardinger.

(2) The authors find that certain protozoa do better in a medium that is physiologically saline.

iii. A critical epitome of the facts of this subject and of the laboratory methods of getting at them.

iv. A résumé of the well-known parasites that enter the human body through the skin.

v. Description of 2 species of Trypanosoma and 2 species of Haemogregarina (of which one, *H. froilanoi*, is new) from Angola toads (*Bufo regularis*).

vi. As is stated in the Introduction, this paper represents "Part I of Stiles and Hassall's Host Catalogue, Index Catalogue of Medical and Veterinary Zoology."

vii. Since 1922 the author has investigated the latex of 7 species of Euphorbia in Tunis and has examined several species of bugs. He has several times inoculated mice, rats, cats, or dogs with Euphorbia latex, but has not observed any result.

viii. "The question of identity of *Balantidium coli* in man and pig is treated in this article."

A. A.

REVIEWS AND NOTICES.

ELLIS (Henry A.) [B.A., M.B., Ch.B.]. **An Explanation of Hydrogen Ion Concentration. The Capillator Method for the Determination of Acidity and Alkalinity in General Practice. Brochure II.** 20 pp. With 2 text figs. 1925. London: H. K. Lewis & Co., Ltd. [Price 1s. net.]

The author feels that the descriptions, in "text-books and papers," of the principle underlying the methods employed for the determination of hydrogen-ion concentration are too complicated to be readily appreciated by "those engaged in general practice," and this pamphlet is an attempt to deal with the subject in simpler language, avoiding, where possible, the use of technical terms. It covers all the ground of interest to those for whom it is designed, but it seems that the author has in some degree underrated the intelligence of his readers, and it cannot be said that his rendering of the subject is as instructive as some of the "complicated" versions of which he complains. Many of the descriptions are long and involved, and frequent reiteration detracts from the interest of the subject without aiding in its elucidation.

The Capillator, a piece of apparatus designed for estimating the reaction of small quantities of liquid, in connexion with the use of which this pamphlet is published, is figured in two illustrations, but the only description of it to be found in the text is, "a series of these colour indicators in capillary tubes, put up in a case together with the requisite number of suitable dyes." A description of the application of the method is not given, but apparently this is contained in a separate pamphlet issued with the apparatus.

J. T. Duncan.